COAL

APRIL, 1959

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See how MSA's complete product line helps deliver full-shift protection, more tons per man



COMMUNICATIONS









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RESPIRATORY PROTECTION



M.S.A Salf Rescuer



M-S-A Dustfoe #66



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HEAD PROTECTION





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NEW M-S-A 20-Shot Blasting Unit

NEW M-S-A Mine Rescue Communications Unit

NEW M-S-A Mine Fire Control Dry Chemical

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No ventilation stoppings needed, mine saves \$5400 a year

B. F. Goodrich improvements in rubber brought extra savings

Problem: Operators of this West Virginia mine had a choice of two ways to protect against the possibility of a conveyor belt spreading fire in their modern, new mine. They could use an ordinary conveyor belt and build ventilation stoppings in the cross ducts along the belt line to prevent main air supply from feeding a fire, or they could use a fire-resisting belt.

What was done: When they figured the savings that would result, they pur-

chased a B.F.Goodrich Caricoal belt made with fire-resisting rubber. This belt will not support combustion or spread fire, and is accepted for listing as fire-resistant by The Bureau of Mines (Acceptance No. 28-6). The special fire-resisting rubber in this belt also has high resistance to impact, abrasion, oil, grease, tearing, cutting, gouging and even mildew attack.

Savings: The chief engineer estimated that the B. F. Goodrich fire-resisting

belt eliminated 60 ventilation stoppings a year. Figuring \$90 each for labor and materials, this is an annual savings of \$5,400, or a total of \$54,000 over the ten-year life span of the belt.

Where to bny: Your B. F. Goodrich distributor has full information on the conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B. F. Goodrich makes for industry. B. F. Goodrich Industrial Products Company, Dept. M-556, Akron 18, Obio.

B.F.Goodrich fire-resisting conveyor belts

These steels do cost more—



This 35½-yard dragline bucket – the world's largest – was recently built by the Electric Steel Foundry Company, Danville, Ill. It will be used in the Central Ohio Coal Company's open pit operation near Zanesville, Ohio. The big problem was to obtain the desired capacity, strength and ruggedness with the least possible weight. To do this, the builder used super-strength USS "T-1" Constructional Alloy Steel plate in the sides, bottom and back. No other steel would provide such high yield strength (100,000 psi), weldability, and resistance to impact abrasios.

The completed bucket scoops 106,000 pounds of load but weighs only 69,000 pounds. Of this, 8,500 pounds are USS "T-1" Steel and 12,000 pounds are USS Man-Ten High-Strength Steel, which has a minimum yield point of 50,000 psi. The weight saved by these two steels goes into extra load capacity and results in lower costs per cubic yard moved.

but they do more — and save more!

Today's mining equipment is the biggest, toughest and brawniest ever built. Much of its ruggedness and long life come from high-strength steels, new grades of super-strong, super-tough alloy steels, and stainless steels. Special steels make the difference. Today's special steels for mining equipment are stronger—tougher—more resistant to abrasion and corrosion. Every pound of these steels in your equipment means money well spent. Money that pays dividends by cutting dead weight, increasing payload, extending service life, reducing downtime and saving operating dollars. USS, Cor-Ten, Man-Ten, Tri-Ten and "T-1" are registered trademarks

Here are the USS Steels that do more:

USS MAN-TEN Steel-High-strength with abrasion resistance and economy. (Minimum yield point 50,000 psi)

USS COR-TEN Steel—High-strength with superior atmospheric corrosion resistance. (Minimum yield point 50,000 psi)

USS TRI-TEN Steel—High-strength with toughness, weldability and abrasion resistance. (Minimum yield point 50,000 psi)

USS "T-1" Steel—Super-strength with impact abrasion resistance, weldability and toughness. (Minimum yield strength 100,000 psi)

USS STAINLESS Steel—High resistance to corrosion, elevated temperature and abrasion.

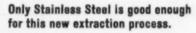
Each of these USS Steels is superior for certain applications. Our metallurgists will help you choose the best steel for your job. Contact our nearest sales office or United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.



USS MAN-TEN Steel helps cut haulage costs.

This 50-ton Dart coal hauler operates at a rate of 5.9¢ per ton-mile. The old, smaller trucks cost 12.6¢ per ton-mile. These figures include truck operation, truck maintenance and other costs. Con-

tributing substantially to the lower operating rate was the use of USS Man-Ten High-Strength Steels which enabled the construction of larger trucks having 15% greater capacity than conventional units. In three years' time, no maintenance was required on the new trucks due to USS Man-Ten Steel's high resistance to abrasion and impact.



Sheritt Gordon Mines, Ltd., Fort Saskatchewan, Canada, has a new method for extracting nickel, copper and cobalt from ore. The ore is dissolved in a bath of ammonium sulfate and ammonia and the metals are recovered from solution. Stainless Steel is the only metal that can be used in the pipes, tanks and pumps that give the "hot bath" of ammonium sulfate to the ore. Other materials can't take the corrosion and high temperatures in this work as well. Stainless has proved more economical than any other metal.

United States Steel Corporation—Pittsburgh American Steel & Wire—Cleveland Columbia-Geneva Steel—San Francisco Tennessee Coal & Iron—Fairfield, Alabama United States Steel Supply—Steel Service Centers United States Steel Supply—Steel Service Centers United States Steel Export Company

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Because Bird Machines for coal dewatering have demonstrated their ability to do the job better and do it at lower cost per ton in preparation plants throughout the industry.

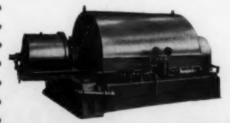
Because Bird Application Engineers consider it their responsibility to assure not only a successful installation but successful, economical operation year in and year out.

Don't take our word for it. Ask the men who operate BIRD Coal Filters or BIRD-HUMBOLDT Oscillating Screen Centrifuges.

This Bird-Humboldt Oscillating Screen Centrifuge delivers ¼" x 28 mesh coal down to 5% surface moisture or less, with almost no degradation or loss of solids. Screen life can be as high as 3000 hours. Power input is only ¼ HP-hour per ton.



This Bird Solid Bowl Centrifugal Coal Filter is dewatering table feeds just as they come, without any pre-screening. It is also the ideal unit for dewatering minus 28 mesh cyclone or thickener underflows. Hundreds of these machines are putting on daily demonstrations of continuous, thorough dewatering at minimum cost of operation and maintenance.



See the Bird Coal Filter and the Bird-Humboldt Screen Centrifuge at the COAL SHOW, BOOTH 233



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APRIL 1959

This Month in COAL AGE

Features This Month:

Barged Coal Due for Bigger Marketing Role p High-Quality Strip and Auger Coal Meets Today's Market Requirements p How to Control Cable Cost p Making a Better Loading Point p New Fine-Coal Plant Strengthens Omar's Market Position p Coal for Electric Power p 50 Biggest Bituminous Mines p Plastic Cables for Deep Mining p Designing for Low-Cost Preparation p
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Transport

Barged	Coal	Due	for								
Bigge	er Ma	rketin	g Role							.p	78

W. A. Raleigh Jr., Associate Editor, Coal Age

For producers having river access, or seeking same through property purchases, river transport offers new opportunities to strengthen present and future competitive standing with "blue-chip" customers and prospects. Factors supporting the prediction are data showing producers' increasing dependance on barged coal, the unchecked migration of industry to riverside especially to the Ohio Valley, big-scale planning to streamline inland waterway navigation systems, and the availability of modern haulage and handling equipment tailored to meet needs of individual shipping situations.

Featured-River modernization programs planned by the Army Corps of Engineers; Coal Traffic roundup-1951-57.

Contour Mining

High Quali	ity Strip	and	Auger	Coal	Meets	
Today's	Market !	Requ	iremen	ts	p	84

Strip and auger coal at B. H. Swaney, Inc., Clarksburg, W. Va., is prepared in modern preparation plant. Careful planning of mining methods, with built-in flexibility for stripping and augering during winter months, assures customers of a year-round supply of coal. Quality coals feature uniformity, low ash and high Btu count. Above average preparation facilities and good planning enable Swaney to sell quality, price and service.

Picture-and-Caption Benefits - On-the-spot pictures of how overburden is prepared, blasted and removed.

Cable Maintenance

How to Control Cable Cost p 90

Proper application and treatment of portable mine cables will result in a lower cost per ton of coal, both from reduced cable cost and increased production. Check points include current rating, conductor size, supply voltage, overload protection and temporary splices. Replacing temporary splices with permanent, vulcanized splices will add extra life to cables.

Featured - A step-by-step description, including photos, shows how to splice and repair cables.

Underground Haulage

Making a Better Loading Point p 96

An automatic loading point, 100% electric powered, is one of the latest developments to be designed and built at Warwick mine, Duquesne Light Co. The equipment was made from unit assemblies and spare parts already on the property. It features a between-the-rails carspotter to eliminate rope handling and a signalling system to the face to inform unit supervisors of carsupply conditions at the loading point. Also provided in the system designed by the master mechanic are provisions for rerailing, if necessary, and guiding cars into loading position.

Bonus-Complete wiring diagram of the setup.

(Continued on p 7)

or additional information see p 9.
nd Form 3579 to Cool Age, 330 W. 42nd St., New York 36, N.Y.

bearing or rides on a shaft of if it slides in a groove or moves on a pivot or transmits pressure on a problem's to gour lubrication or transmits is designed to make it work better. For answers to your lubrication problems, write today to

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Preparation

Daniel Jackson Jr., Assistant Editor, Coal Age

A new 200-tph, ½x0 cleaning plant featuring tabling, thickening, filtering, and mechanical and thermal drying at Omar Mining Co's. central preparation plant, solidifies Omar's position in the competitive metallurgical market. Better recovery of fines and improved overall plant efficiency are added benefits.

Illustrated—Detailed flow sheet shows capacity of various circuits.

Industry Statistics

Coal for Electric Power

Origins and Points of Use, by States . p 116

Results of a survey by Keystone Coal Buyers Manual of 1958 coal purchases by utility companies.

50 Biggest Mines p 118

Frontrunners among U. S. bituminous mines ranked according to 1958 tonnage.

Underground Power

Plastic Cables for Deep Mining p 122

C. William Parisi, Director of Safety; Thomas Blandford, Assistant to the Mining Engineer, Pittsburgh Coal Co., Library, Pa., and J. Vincent McBride, Chief Engineer, Plastic Wire & Cable Corp., Jewett City, Conn.

Pittsburgh Coal Co.'s experience with 25,200 ft of plastic-jacketed trailing cable over periods up to 13 mo indicate an increase of at least one-third in tonnage per cable. Mechanical and electrical tests of the new cable prove its ability to serve in typical mining conditions. None of the constituents will support combustion.

In a mine where plastic cables were used exclusively for replacement purposes throughout 1958, coal production was 3,966 tons per 100 ft of replacement cable. The average for the two previous years was 2,951 tons per 100 ft of replacement cable.

Coal Preparation

Designing for Low-Cost Coal Preparation p 126

Nelson L. Davis, President, Nelson L. Davis Co., McHenry, Ill.

Power companies, comprising the largest single outlet for coal, direct their research toward this single

This Month

n C



TURNING POINT—The second quarter may mark the turning point for sustained upward movement in bituminous production. The persistent lag in recovery took March weekly output down to a new low substantially under 8 million tons. In part responsible are depressed export sales and losses in residual-oil consuming outlets. But informed analysts blame the new low mainly on deferred buying. Big coal consumers have been drawing heavily on inventories; among possible reasons, they may be seeking lower levels of reserves-supply or anticipating major rail-rate cuts due in April. Whatever the cause, pressures should increase for upward inventory adjustments, making a boost in second-quarter buying a better-than-fair bet.

STEEL RECORDS—Through mid-March steel production continued to post consecutive record highs. Weekly output and operating capacity were running, respectively, well above 2.5 million tons and 90%. Much of the buying momentum comes from inventory build-ups anticipating a possible strike July 1. But, while the momentum lasts, higher steel use of coal remains in the picture, with commercial producers certain to gain as the industry pushes carbon needs beyond the limits of captive output.

NOTABLE GAINS—To the surprise of many, President Eisenhower's curb on oil imports included the residual product. The quota set for residual imports east of the Rockies—475 to 480,000 barrels a day—is only slightly below recent alarmingly high experience. In terms of recovering coal-equivalent tonnage, such curbs give no grounds for flag-waving. But these gains can be noted. Competition from residual oil is not likely to get worse. And the Federal Government has at least responded to coal's plea for greater recognition.

INDUSTRY TONIC—Formation of the National Coal Policy Conference Feb. 25 came opportunely when coal fortunes were badly in need of a tonic. Discussed for months, the conference took formal shape a figw weeks before its announcement. Precipitating factors included the mounting pressure of "unfair" competition at home and the severe tariff imposed by West Germany.

"John L." is justly credited with making the immediate proposal at last year's National Coal Show for uniting all coal groups and allied industry interests into "a common voice." For a much longer time, however, other industry statesmen and Coal Age have campaigned for integrated action in attacking industry problems. Although the jump from tonics to cures is often a big one, the calibre of NCPC leadership augurs well for achievement.

SUCCESS STORY—Use of anthracite wastes to make hydrogen, synthesis gas and related chemicals should go commercial in 1959, according to Howard A. Newman, president, Philadelphia & Reading Corp. Another statement announces planned acquisition of two clothing manufacturers as new subsidiaries. These new facets of P & R's success story have catapulted its stock, within 2 yr, from 27 to a March listing of 131.

Basic ingredients of the firm's success (Coal Age, February, 1957, p 54): astute management, diversification, cost-cutting and research.

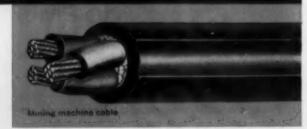
Power knife for cutting costs

Coal cutters, and all other powered mining equipment, such as loaders, feeders, shuttle cars and drills, work toward the one big goal of safer, more economical production. Simplex-TIREX cords and cables are helping to achieve this goal in mines everywhere. They offer maximum flexibility, and their jacket of cured-in-lead Neoprene Armor resists abrasion, oil, heat and water, and gives longest life.

SIMPLEX WIRE & CABLE CO.,
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Wire sculpture by Henry Szafarz

See us at Booth No. 1611—1959 Coal Show TIREX



This Month in Coal Age-Cont'd

objective: Lowest possible fuel cost for raising steam. The target for each producer of fuel serving this market should be to produce steam coal at the lowest overall cost. Trends in modern design are (1) precise control of clean-coal quality, (2) minimum handling of coal before cleaning to reduce capital costs of fine-coal cleaning and drying and water treatment and (3) automation wherever it will reduce labor costs and permit better care of the machinery.

Highpoints — Suggested flowsheets for handling strip- and deep-mined Illinois coals,

▶ Coming Event

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This Month

in

Mining Practice

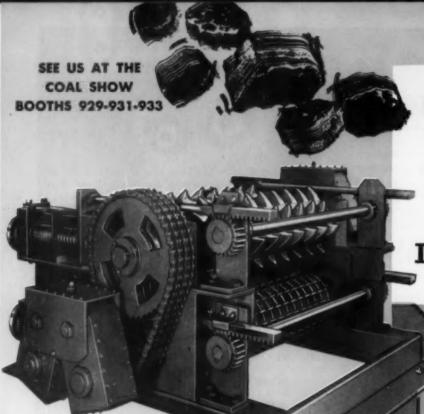
HOW LOW?—Cutters 14 in or thereabouts low date back many years in coal mining, but even in those years mobile equipment that low, beyond occasional flat-bed cars, was scarce. What is the picture today? It is one of squeezing the vertical dimension to extents hardly dreamed of in days gone by—for instance, 26-in-high shuttle cars and 30-in-high continuous miners. These represent real design achievements, especially since the capacities made possible by modern design and materials and high horsepower are real contributions to low cost. Today's low-coal units, which are growing steadily in number and versatility, are materially broadening the possibilities in low veins.

GLASS BEARINGS—Is a ball bearing made of glass a possible real competitor of the conventional steel unit? The answer is a definite "Yes," though glass naturally will not sweep the field. But glass bearings are here and can, for all practical purposes, be considered out of the design and experimental stage. Fairly early coal field use is probably certain.

LIGHT CARS—The use of aluminum for mine cars goes back to the early 30s, when such a unit—and a companion hopper car for railroad use—were first put into experimental use. Since then the aluminum price has come down and it has been improved in strength and other characteristics. Now a new big car in a design of today has gone into service. In the not-too-distant future it and its brothers may provide the answer to whether aluminum can become a serious competitor of steel in this area.

SHOOTING AND BREAKING-Drilling and shooting of overburden in stripping has been the subject of major development in several directions - drilling, charging and breaking mediums-in recent years, including the use of fertilizer-grade ammonium nitrate as an explosive and the development of mechanical and blow charging. The activity continues with the development of such things as new charging and stemming units just now being announced, increased versatility in use of ammonium nitrate and other explosives, and concentration on improvement of the horizontal drill. There also is parallel activity in certain phases of face preparation underground. Multiple charging and rapidsequence breaking with compressed air are now in the production stage as a result of good results in initial field trials and seem well on their way to establishing themselves where conventional mining is the practice.

ACCENT ON FINES—Planning for the exhibits at the 1959 Coal Show of the American Mining Congress highlights even more vividly the growing importance of fine-coal circuits and equipment in the coal-preparation field. The displays of this year represent a new high in variety and number of units and systems for fine-coal handling, preparation and drying, and related water-clarification and solids recovery, ranging from pumps and cleaners through screens and thickening equipment to heat and mechanical dryers and filters. Watch especially for new and improved screens, centrifuges and filters.



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By Less Fines . . . Simplifies unloading . . . increases boiler efficiency.

Uniformity in size consist of GUNDLACH crushed coal eliminates customer complaints, gives customer satisfaction, and increases production.

Yes, greater efficiency, dependability and lower operating and maintenance costs make the GUNDLACH crusher the mine owner's best investment.

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The Coal Commentator

Expanded Line

The key role of transportation in mining efficiency both overall and at the face is being more and more recognized in equipment developments, not only in the United States but abroad.

Russia's high-frequency locomotive, operating through a magnetic field, has already been noted in these columns. A recent Charbonnages de France publicatic cites particularly the use of 600-V electric and diesel locomotives for main-line haulage, plus conveyors at the face. In the U. S., a new field test of aluminum mine cars—all-welded—is under way, new low-type ropeframe conveyors and shuttle cars are being announced almost daily, and auxiliaries being developed to help promote the efficiency of other transportation equipment include special conveyor-type feeders between shuttle cars and conveyors. And this is not all.

Transportation, whether face, intermediate, mainline or hoisting, is a key operation. Now, those bent on improving it have an expanded line of modern units to call on.

Nuclear Oil

Parachute Creek, in western Colorado, is being discussed as the logical site for a proposed \$2½ million experiment aimed at getting oil from oil shale through nuclear explosions underground.

So far, the project is very much in the "If" stage, though a March 8 announcement from the Cornell University News Bureau brought the word that students at the university had completed a design for a city of 350,000 near the proposed site. The shale, it is reported, contains 15 to 25 gal of oil per ton and "it is anticipated that the explosion may release as much as 15,000 bbl of oil," plus as much as 10 million cu ft of natural gas.

Even if the project is carried through the second "If"-the economic one-remains very much a big one.

Handsome Payoff

"Accident is chance . . . but prevention is not."
This in a nutshell sums up the conclusion of insurance authorities your commentator quite recently had the pleasure of hearing in a nuts-and-bolts session.

how to reduce the chance . . . or the odds? As always, the burden falls on management, though the worker has a vital role. But management must set the stage, provide the organization and physical

facilities, set the standards and keep the show on the road. Only then is it in the best position to insist that the employee do his part.

And management takes the rap on losses and conversely stands to gain real benefits from the financial angle. A high accident rate means not only higher compensation cost but also a hidden cost variously estimated at 2 to 4 times the direct. A low rate, on the other hand, means money in the pocket, fully reflecting the fact that accident-prevention is not chance but an operation sure to pay off handsomely.

New Opportunity

Though the time when it will be reflected in results in the field for which it was established may be distant rather than near, there still may be a reasonably early return on the coal and railroad investment in the development of the coal-fired gas turbine. This grows out of the recent decision to have the Bureau of Mines establish the feasibility of the turbine for power generation in stationary plants.

Thus the money and time spent on this project may come back from other fields than railroading, where so far only the Union Pacific has moved to convert Locomotive Development Committee findings into an operating road unit. A practical unit for stationary work would of course expand coal's opportunities and make it easier to progress in the railroad field and break into others, such as, marine transport where, as in the others, oil-fired turbines already have proved their possibilities.

Cable Heating

For any type of cable in any application the maximum safe service life can be achieved only if the cable is operated within the maximum rated temperature limit.

If a cable is too hot to be held in the hand the user is losing money, and the higher the temperature the greater the loss rate. The problem grows as the operating voltage is reduced, which means that overheating is more acute at the conventional 250-V level than at higher pressures.

There are tried and tested remedies for cable overheating—the main ones being rated voltage at the nips, proper size of conductors and good cable maintenance.

Cable cost is no small item, and the losses in machine downtime mount up rapidly where cable trouble is frequent. Keeping temperature down means that the basic principles leading to efficiency and safety are being fully applied.



Gulf makes things run better with new lubricant for modern

NEW GULF MINING

Now you can get more tonnage between overhauls from your continuous miners and other key equipment, with a new heavy duty lubricant— Gulf Mining Lubricant H.D.

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Every requirement for grease at the face can be handled quickly and effectively with new Gulf Mining Lubricant H.D. Use it to lubricate your continuous miners, automatic loaders, cutting machines—all your heavy duty equipment.

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COAL AGE · April. 1959

13

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1959 COAL SHOW

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How the Youngstown VTI t guarantees safe roof practice

Shown at right is a VTI Roof Be pal nut, and a bell type impact wrench, the VT' elf-supporting expansion shell, washer. When tightened with 20 and 6,500 pounds tension. No crimp means a safe roof.





Check these advantages of Youngstown's new VTI bolt heads

When VTI crimps flatten, tension is 5,500 pounds to 6,500 pounds. It provides a definite indication that the bolter has tightened the bolt and that its anchorage is strong enough to support the required tension.

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- 3. Insufficient anchorage
- 4. Hole diameter too large
- 5. Defective anchorage material
- 6. Improper use of equipment
- 7. Inexperienced bolting crew

Make sure you have a check on all these by using Youngstown VTI Bolts.

MINE ROOF BOLTS

At the Nemacolin Mine of Buckeye Coal Co., Nemacolin, Pa., tests were recently conducted on %-inch VTI Roof Bolts by the United States Bureau of Mines. They clearly show how the VTI feature provides a simple, fool-proof and economic means of assuring a predetermined minimum load.



VTI Bolt head showing crimping prior to loading. Air cylinder for tension testing is placed between roof and bolt plate.



Bolt head—loaded to 5,000 pounds—shows crimp beginning to flatten (note gauge reading).



At 6,100 pounds, crimp flattens completely.

*Youngstown VTI Mine Roof Bolt Patent Pending.



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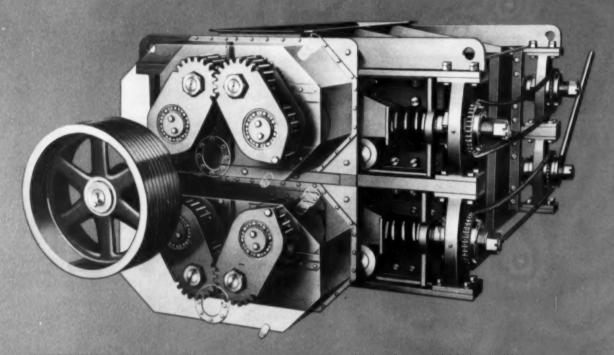
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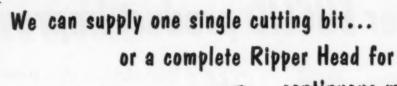
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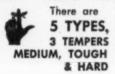
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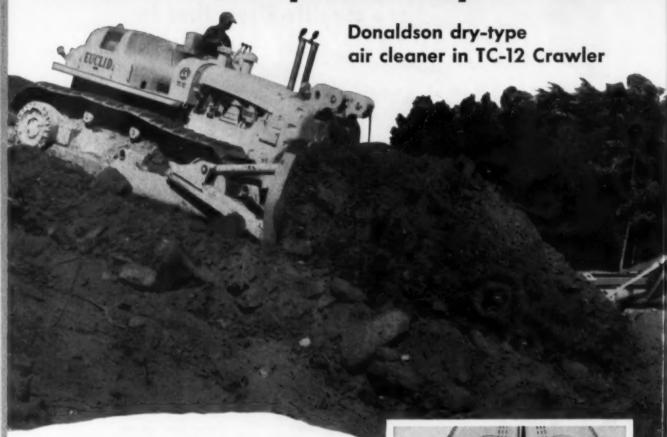
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One of the reasons the new series Euclid TC-12 Crawler provides more work-ability with less downtime is the unequalled accessibility of all major components for quick, easy servicing.

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HIGH EFFICIENCY CLEANER INCREASES ENGINE LIFE

The Euclid TC-12 Crawler is now being built with the Donaclone dry-type air cleaner as standard equipment. This 99.9% efficient cleaner reduces engine wear caused by dust—increases the service life of the engine and helps maintain top operating efficiency. Engine manufacturers say that 8 ounces of



abrasive dust can ruin an engine in a short time. Because of the tremendous volume of air that passes through an engine in a single shift, the importance of air cleaner efficiency is obvious. That's why Euclid uses this Donaldson cleaner on the new series TC-12... it's another example of constant product improvement that makes Euclid your best investment.

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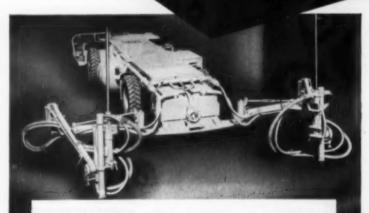
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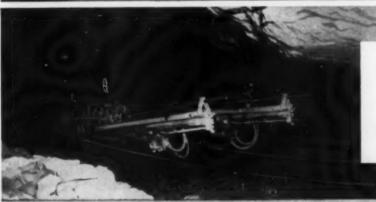
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MODEL 275-T COMPRESSOR Track mounted with 3" class drifter. Self propelled units available with or without cable reels. Stoper or drifter arms may be added.

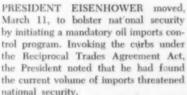
ACME MACHINERY COMPANY

WILLIAMSON, WEST VIRGINIA

News Roundup

Eisenhower Curbs Oil Imports

The President imposes mandatory controls on all oil imports to bolster national security . . . adapts surprise regulatory plan based on oil prices.



Although most importers had heeded the old voluntary quotas, Mr. Eisenhower said, some oil men had exceeded their l'mits, leaving no solution other than the application of definite, enforceable quotas.

As a result of the new program, oil imports are expected to decrease from 2 million to 1.5 million bbl per day.

In a surprise move, the President also announced that the government will scrutinize all price increases in oil, its products or derivatives. If boosts are considered too high, more imports of foreign oil would be allowed, presumably to act as a brake on prices.

This oil-pricing system is seen by most economists as a major step in the President's current campaign against inflation. White House aides have insisted loosening of import quotas is the only method presently in mind for enforcing the price controls. In fact, top officials choose to call it "merely a regulating mechanism for putting a moving lid on prices."

The Unexpected—Surprising to many was the announcement that as of April 1 the o'l curbs program would cover finished products, including residual oil, one of coal's chief competitors in the utility and industrial fuel markets. Quotas on residual oil, however, are set just



OIL from such distant lands as this middle eastern nation came under strict curbs imposed by the President on March 11.

a shade below limits under the old voluntary plan, some 470,000 bbl per day compared to 480,000 originally. Most informed authorities, therefore, see the inclusion of residual oil within the new program's scope as meaning little more to coal than the prevention of a near-term flood of cheap residual.

Imports Figures—Sharpest reductions in imports will come in finished products other than residual, these including gasoline, jet fuels, asphalt, naphtha, fuel off and lubricating oil. It is expected that actual imports of about 300,000 bbl daily in the last quarter of 1958 will be knocked down to about 60,000 bbl per day under the new program.

For crude oil and unfinished products, oil and gasoline which require further processing, the new levels are expected to work out to about 937,000 bbl per day compared to past levels of 1,113,500.

Why Residual?—Several oil journals commenting on the new program suggested that the inclusion of residual shaped up as a political decision deriving from the competitive position of imported oil with coal. In addition, the New York Times of March 12 said that "the decision to set up a system of compulsory import quotas covering crude petroleum and its products is an unhappy victory for a group of special interests whose gain will be at the expense of the general welfare and perhaps, ultimately, even at the expense of those who sought this move."

Arguing against the security position set forth by pro-curbs groups, the *Times* declared that there is a great deal to be said for importing foreign oil and keeping as much American oil as possible under the ground in case of emergency.

Coal's View-The National Coal Association stated that although it was gratified by the inclusion of residual oil in the program the controls did not go far enough. Tom Pickett, executive vice president, declared that the program "seeks only to arrest the disease instead of curing it." He added that the program "leaves many util ties and industrial plants dependent on foreign fuel which could be cut off in emergency. It also continues a serious injury to the coal industry and to railroads which de-

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rive important revenue from hauling coal."

Foreign Problems—President Eisenhower recognized that the mandatory program could have unfavorable effects on Canada and Venezuela, among the chief suppliers of oil imported into the United States.

Venezuela, perhaps anticipating the move, recently hiked its taxes on oil recovered by concerns within that country, including a majority of American firms. Canada has protested strongly and it is anticipated that special allocations of as much as 70,000 to 75,000 bbl per day may go to Canadian producers in addition to the basic national quota of 937,000 bbl per day.

The President pledged that mandatory controls "will be flexibly administered with the twin aims of sharing our large and growing market on an equitable basis with other producing areas and avoiding disruption of normal patterns of international trade."

Coal Group Formed

Coal producers, the United Mine Workers, coal-carrying railroads, coal-using electric utilities and a number of industry equipment suppliers announced Feb. 25 the formation of an over-all organization to advance and promote the interests of the coal industry on the "broadest possible front."

Called the National Coal Policy Conference, the organization will be headed by George H. Love, chairman of the board at Consolidation Coal Co. Joseph

E. Moody, president of the Southern Coal Producers' Association, will serve as executive director.

The group will be headquartered in Washington and will have among its main objectives:

 The development and execution of a nation-wide campaign to acquaint the public with the vital importance of the coal industry to the national welfare.

The broadening of domestic and export markets for bituminous coal.

 The encouragement and promotion of research into the production, marketing and utilization of coal.

4. The creation of positive and constructive government policies toward the bituminous coal industry.

Steps to increase coal's depletion allowance in order to meet rising costs of operation, and to accumulate the capital needed for future expansion.

Enthusiastic Comment—John L. Lewis, who is credited with having suggested a group similar to the new organization, declared the "formation of the National Coal Policy Conference can only be considered as among the most gigantic forward strides taken by the American coal industry in its long and proud history."

Howard E. Simpson, president of the Baltimore & Ohio Ry. Co. said "the railroad industry welcomes the formation of the National Coal Policy Conference as a major step toward the economic recovery of America's coal and railroad industries."

Committee—Also announced Feb. 25 was an executive committee to direct the new group, including:

Coal operators: George H. Love, Con-

solidation Coal Co.; Dr. C. J. Potter, Rochester & Pittsburgh Coal Co.; F. S. Elfred, Peabody Coal Co.; Harry Laviers, Southeast Coal Co.; Raymond E. Salvati, Island Creek Coal Co.; and Kenneth A. Spencer, Pittsburgh & Midway Coal Mining Co.

United Mine Workers: John L. Lewis, president; Thomas Kennedy, secretary; and Michael Widman Jr., assistant to president.

Railroads: H. C. Murphy, Burlington Lines; Howard E. Simpson, Baltimore & Ohio Ry. Co.; and John Tilford, Louisville & Nashville R.R. Co.

Utilities: Philip Sporn, American Electric Power Service Corp.

Coal Equipment Industry: J. H. Fulford, Jeffrey Mfg. Co.; and W. L. Wearly, Joy Mfg. Co.

Coal Firms Merge

North American Coal Corp. and Warner Collieries announced March 13 that they would merge, with the approval of their stockholders.

Producing over 1 million tons, the Warner firm has properties in West Virginia and Ohio. Its Hurricane mine in West Virginia is well located for barge movement on the Kanawha River. Warner's Ohio Jensie mine enjoys favorable freight rates, according to the firm.

North American's mines are located in Ohio, West Virginia, Pennsylvania and North Dakota, producing about 5,500,000 tons per year. The firms note that the Warner properties are complementary to North American's and give the latter access to new markets.

It is planned that Whitney Warner Jr. will be elected a vice president in charge of all West Virginia operations of the merged companies.

Conveyor Order

Island Creek Coal Co. has ordered an 8,800-ft conveyor system from Hewitt-Robbins, Inc., to transport bituminous coal out of the coal firm's No. 28 mine at Verdunville, W. Va.

The conveyor system will be made up of five units ranging in length from 1,400 ft to 2,300 ft, linked together in a continuous line extending from the mine face to the mine opening.

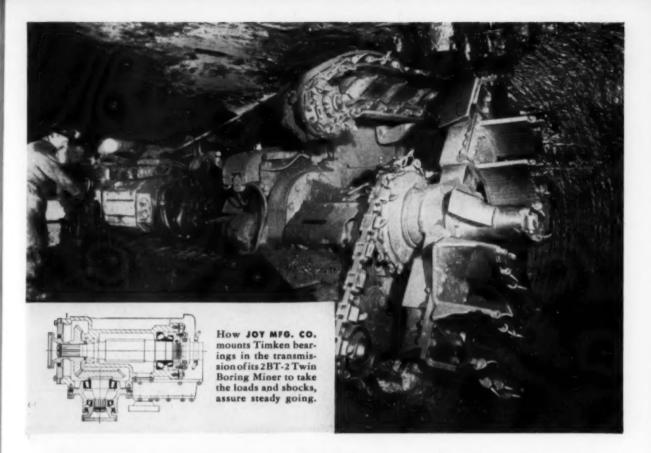
Designed to run at 600 fpm and handle coal at a peak capacity of 1,340 tph, the conveyors will replace a trackhaulage system in the mine.

The machinery, consisting of newlydeveloped wire rope-supported idlers and related equipment, including speed reducers, will be produced in the



PEABODY COAL CO. has given its wholly-owned subsidiary railroad, Belleville Electric Railway Co., a new name and a new look. Now to be known as Peabody Short Line Railroad, the transportation facility's cars have been decked out in standard Peabody colors of yellow, green and red.

Peabody, headquartered in St. Louis, Mo., acquired the railroad from Union Electric Co. in 1956 for use as a major facility to transport coal from its new River King mine near Freeburg, Ill. Two new 1600-hp locomotives have recently been purchased and a third is on its way. Since the purchase of the railroad which then had 20 mi of trackage from East St. Louis to Belleville, Ill., an additional 11 mi from Belleville to the River King plant have been built.



40-ton twin borer mines 8 tons per minute ... Timken* bearings take the shocks

T mines 8 tons of coal per minute ... advances 2 feet per minute in a 7 foot seam. Yet this giant 40-ton Joy Twin Borer does a smooth, economical job—with 73 Timken® tapered roller bearings to take the heavy shocks and twisting loads. Timken bearings are used at these vital points: main transmission and primary reducer unit.

Here's how Timken bearings assure trouble-free operation and long life with minimum maintenance for users of this Joy Twin Borer.

- 1) The tapered design of Timken bearings lets them take radial and thrust loads in any combination.
- 2) Full line contact between rollers

and races gives Timken bearings extra load-carrying capacity. And rollers and races are case-carburized to have hard, wear-resistant surfaces over tough, shock-resistant cores.

- Timken bearings are made of finest steel. We make it ourselves to be sure.
 No other American bearing maker does.
- 4) By holding shafts concentric with housings, Timken bearings make closures more effective in keeping dirt out, lubricant in, maintenance down.

To get or build better machines, make sure they're equipped with Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.

At The Coal Show, see the Timken Company Exhibit, Booth 900.

WHEN YOU BUY TIMKEN" BEARINGS YOU GET...

- 1. Quality you can take for granted
- 2. Service you can't get anywhere else
- 3. The best-known name in bearings
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This symbol on a product means its bearings are the best

BETTER-NESS rolls on

TIMKEN.



First in bearings for 60 years

tapered roller bearings

News Roundup (Continued)

Hewitt-Robbins plants at Passaic, N.J., and Chicago.

To Open New Mine

Freeman Coal Miring Corp., a division of Material Service Corp., has announced it will begin immediately to develop a new mine some 3.5 mi east of Benton in Franklin Courty, Ill.

To produce 7,000 tons per day, the deep-shaft mine will be highly mechanized and will employ about 350 men, according to the firm.

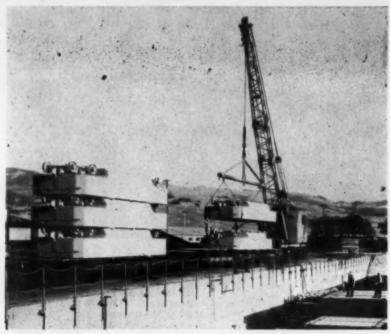
The mine, which is expected to begin production in 1960, will be known as Orient No. 5 and will be served jointly by the CB&Q, C&EI, IC and MoP railroads.

Cleaning processes in the preparation plant will use heavy med'a separation and air flotation equipment.

Strikes Shut Mines

Twenty-six Harlan County, Ky., coal mines have been shut close to a month as a result of walk-outs by members of

(Continued on p 72)



NINETY-FOUR new mine cars with the latest improvements move on their way to Kaiser Steel Corp.'s Raton, N. M., coal mine. The cars, built at the firm's Fabricating Div. in Napa, Cal., w'll replace older smaller cars. Each 28-ft. 13,800-lb car can carry 16 to 20 tons of coal depending on the type mined. They are designed to permit hydraulic car spotting and may be rotary dumped.

BEST FOR LOW SEAMS THE WILCOX CONTINUOUS MINER

Now in the fifth year of producing coal from Alabama to Nova Scotia and as far west as Oklahoma . . .

HAS BEEN PROVEN

- By producing coal in seams ranging from 28 to 46 inches thick
- By producing coal under roof conditions where other mechanical equipment has failed
- By producing coal with lower maintenance cost per ton than any miner on the market
- . By producing up to 60 tons per man per shift

- · By its unparalleled safety record
- By repeated orders of 95% of our customers from 1 to 12 miners per customer

THESE FACTS along with the low initial cost, the low 25½ inch overall height, and many other features of the Wilcox Continuous Miner have been responsible for opening many new seams throughout the country.

THE WILCOX CONTINUOUS MINER IS YOUR ANSWER FOR MORE TONS PER MAN AT LESS COST PER TON

For additional information call CLifford 2-6555 Beckley, West Virginia, or write

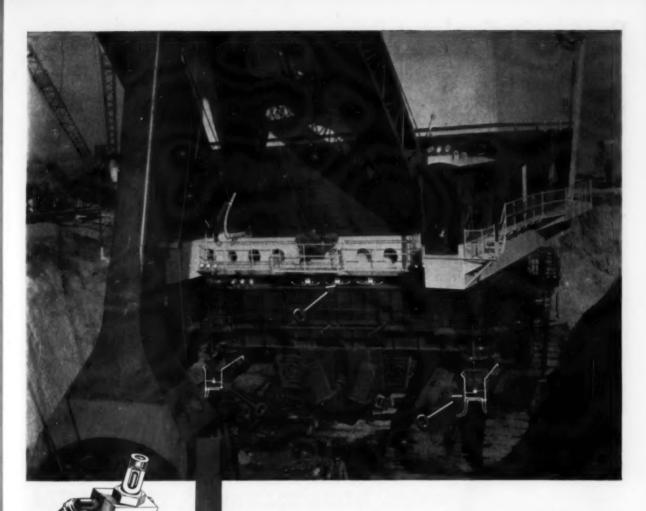
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WILCOX MANUFACTURING

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COMPANY

RALEIGH, WEST VIRGINIA



Farval handles lubrication requirements for shovel bearings under 6,000,000 pound load

On this Marion \$5760 shovel in the Midland Colleries near Victoria, Illinois, some 6,000,000 pounds rest on eight crawlers. The constant, positive lubrication required at the shovel's 336 undercarriage points is provided by a Farval air-operated system.

FARVAL

-Studies in Centralized Lubrication No. 224

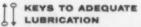
Another Farval system serves 115 roller circle bearings and 12 center pin thrust points through a system which can be disconnected as the points rotate.

A critical group of 33 points which move in a 165° arc and 58 other points on the huge shovel are similarly protected by modern Farval lubrication systems.

Where load pressures are high, where flexibility is required, and where lubrication without downtime is desired, Farval systems are the answer. Write today for revised Bulletin 26-S, The Farval Corporation, Jaou East 80th Street, Cleveland 4, Ohio.

Sing, U.S. Pat. Of.

Affiliate of The Cleveland Worm & Gear Company (Subsidiary of Eaton Mfg. Co.)



Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.



People in Coal



New Responsibility

VERNON O. MURRAY, who makes his home in Rock Springs, Wyo., has risen to the presidency of Union Pacific Coal Co. Mr. Murray, who succeeds the retiring I. N. Bayless, president since 1944, has had extensive experiences during his many years in the coal industry. He first joined Union Pacific in 1930 as a safety engineer and pursued a career marked by successive jumps upwards within the organization. In 1937 he was named mine superintendent and in 1940 was chosen as general superintendent. He became assistant general manager in 1944 and general manager of the firm in 1946. The continued rise of Mr. Murray to positions of more responsibility is indicative of the high degree of confidence Union Pacific has in its newly-elected president.



Harry Northover joins Coal Age as circulation representative in western Pennsylvania. Mr. Northover, a mechanical engineer, graduated from ICS and American School of Chicago. Entering the mines in the late twenties, he worked his way up from fire boss to general superintendent, associated during that time with Morrisdale Coal Co., Rochester & Pittsburgh Coal Co., Pittsburgh Coal Co., U. S. Steel Corp., and Bethlehem Steel Corp. He has state mining certificates for Pennsylvania, Ohio and West Virginia as well as a

certificate from the Mineral Industries Extension course of Advanced Coal Mining from Penn State. Mr. Northover's career has been marked by experience in over 1,400 mines including gypsum, salt, lead, zinc, mica and iron mines.

Albert L. Fairley Jr., 45, has been named president of the Dominion Steel & Coal Corp., one of Canada's largest industrial organizations. Two other senior appointments were announced: Crawford Gordon Jr. was named chairman of the board; and Allan C. MacDonald was elected vice chairman and chairman of the executive committee.

Joseph Pursglove Jr., vice president of research and development, Consolidation Coal Co., has been elected a member of the Board of Trustees of St. Joseph Lead Co., N. Y. In addition to heading Consol's extensive research program, Mr. Pursglove is the president of Pitt-Consol Chemical Co. and Mountaineer Carbon Co. Actively associated with the coal industry since graduation from Cornell University in 1930, Mr. Pursglove is a director of Bituminous Coal Research, Inc., and Atomic Power Development Associated of Detroit.

W. D. Starling Jr. is the new superintendent of underground mines for Boone County Coal Corp. He joined the firm on Jan. 1, 1959, as general mine foreman of Boone's Mine 2-C. Mr. Starling had been with the United States Steel Corp. at Gary, W. Va., for 7 yr, holding various supervisory capacities in the coal-mining division. He and his family live in Sharples, W. Va., where he also makes his headquarters.

Newell G. Alford, consulting mining engineer specializing in coal-property prospecting, development, operation and valuation, has closed his office and retired from active service for health reasons. His career of several decades has been marked by experience in foreign construction and development, as well as in the design, development and operation of many of the outstanding properties of the United States.

J. F. Lake, Osage Coal Co., has been chosen president of the Colorado & New Mexico Coal Operators Association. Claud P. Heiner, Minerals Development Corp., was named first vice president, and W. W. Brown, Edna Coal Co., was elected second vice president. Named treasurer was O. M. Hanks, Colowyo Coal Co.

Courtland T. Dahlin, Princess Coals, Inc., has been elected president of the Big Sandy-Elkhorn Coal Mining Institute. Named as vice president of the Institute in 1958, Mr. Dahlin has been acting president of the organization since



Here at last is positive protection against ground faults and short circuits for all D. C. operated off-track mining machines and their trailing cables.

The JOY — LECTRONIC SENTRY offers a degree of protection never before possible. An ever-present monitoring signal is interrupted when trouble occurs and an automatic circuit breaker acts instantaneously to remove power from the complete machine and trailing cable. There is no destructive arcing due to heavy fault currents as in the case of operation with a ground wire. There is no false sense of security as the Lectronic Sentry must fail safe!

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People in Coal (Continued)

the death of the president, R. C. Collier, Bethlehem Mines Corp., last year. Other officers elected are: Minor Pace, Inland Steel Co., first vice president; Elmer Queen, Russell Fork Coal Co., second vice president; and H. B. Jones, Eastern Coal Corp., third vice president. J. H. Mo grove, Big Sandy-Elkhorn Coal Operators Association, was re-elected secretary treasurer.

Six personnel changes have been announced by Eastern Gas and Fuel Associates:

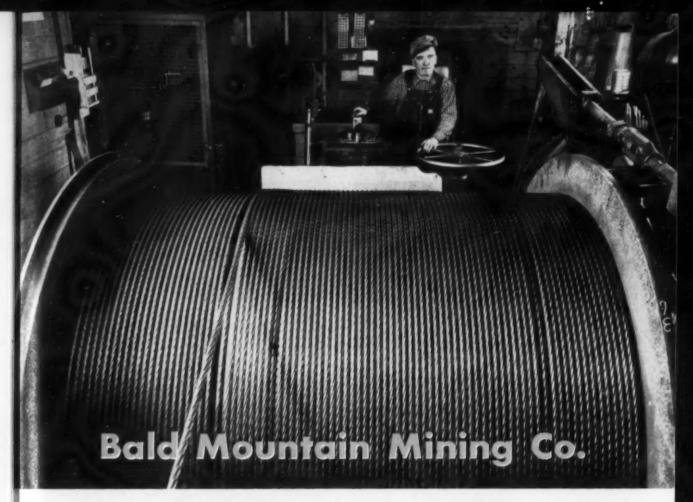
K. S. Hobbs has been chosen superintendent of the company's Stotesbury Nos. 10 and 11 mines, near Beckley, W. Va.; C. O. Carman is named production engineer for Eastern's Low Volatile Div., which includes the company's Keystone, Eccles, and Stotesbury mines, all in southern West Virginia; C. J. Kirby, superintendent at the Stotesbury Nos. 10 and 11 mines, has been granted a leave of absence; Donald W. Hurter, production engineer at Eastern's Sonman mine in Central Pennsylvania, has been named resident engineer at the Wharton No. 1 mine at Wharton, W. Va.; John P. Bougues, who has been the resident engineer at the Wharton No. 1 mine, is transferred to resident engineer at the company's Federal No. 1 mine, near Fairmont, W. Va.; Frank W. Riddle, who has been res'dent engineer at the Federal No. 1 mine, has been named a member of the Chief Engineer's Staff in the Engineering Department of Eastern in Pittsburgh.

Pittsburgh Coal Co., Div. of Consolidation Coal Co., has made some personnel changes: William G. Barringer was placed in charge of Math'es preparation plant; Gaylord W. Whirlow has been appointed mine foreman at Mountour No. 4; and Willis Barker, master mechanic at Mountour No. 10, has been cr. nsferred to the same job at Montour No. 4.

Dennis A. Mooney is the new superintendent of the Montcoal operations of Armco Steel Corp.'s West Virginia coal mines. He succeeds A. E. Oakley, who retired after 25 yr with Armco.

Obituaries

Joseph F. Guffey, 88, a former Senator, died March 6 in Washington, D.C. Mr. Guffey was co-author of the original Price Control Act for the bituminous coal industry passed in 1935 and declared unconstitutional in 1936. A subsequent measure, the Bituminous Coal Act of 1937, was passed in 1937 and expired in 1943.



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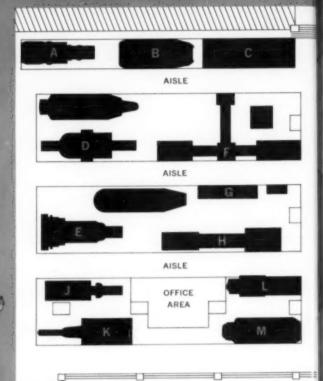
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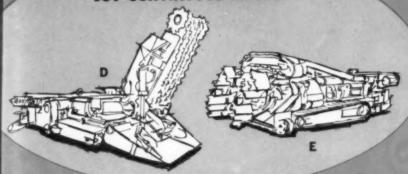
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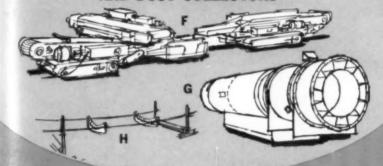
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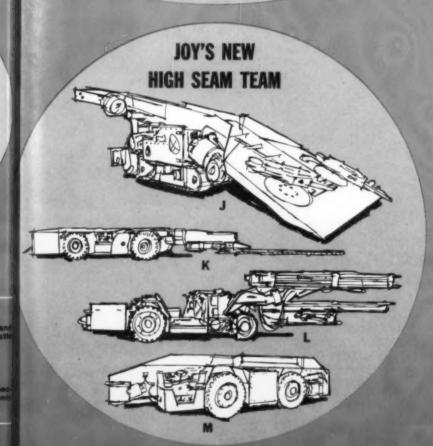
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—A twin-boom drill that requires just one operator. Drills 21' from side to side and from 4" to 10'6" from the floor.

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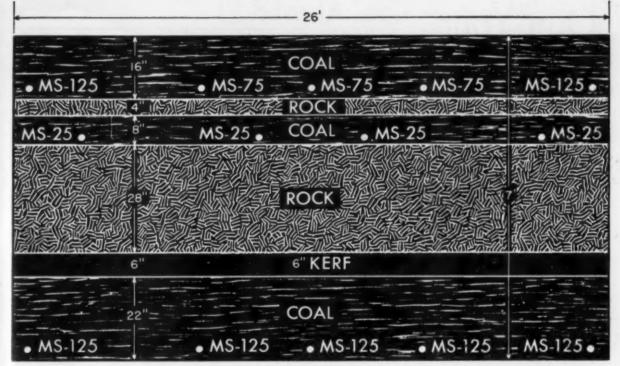
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The use of DuPont MS delay caps has improved both safety and production in this Central Alabama coal mine with a real "middleman" problem.

Use of Du Pont MS DELAYS promises new savings and increased safety

New Du Pont 20-shot blasting machine just declared permissible

Multiple firing with short-interval, delay electric blasting caps has led the way to increased economy and safety in many hard rock mining and quarrying operations. Permissible short-interval, delay blasting with Du Pont MS Delay Electric Blasting Caps will give the same advantages in coal shooting.

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- 1. It reduces exposure to dust, fumes, smoke, and falls of coal, as it is unnecessary to re-enter the room until all shooting is finished.
- 2. It is easier on the roof and ribs, thus reducing the hazard from roof and coal falls.

B. INCREASED ECONOMY ... because

1. The reduced shooting time produces more

coal per man-hour.

- 2. Improved displacement gives better load-
- 3. More efficient blasting gives a lower powder factor.

And the new Du Pont 20-shot, permissible blasting machine was designed especially for shortinterval, delay multiple firing in coal mines. It is authorized by the U.S. Bureau of Mines for firing up to twenty 16-foot iron wire MS delay electric blasting caps.

For complete information on permissible blasting with DuPont MS Delay Electric Blasting Caps and the DuPont 20-shot permissible blasting machines, see your Du Pont representative or write directly to DuPont, Explosives Department, Wilmington 98, Delaware.

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THE NOLAN COMPANY

Coal Abroad

	Coal quality	Coal production in metric tons		
Country		1958	1960	1965
Alabania	Lignitic	269,000	299,099	
Bulgaria	Lignitic Sub-bituminous Bituminous Hard	12,730,000	9,430,000 8,210,000 890,000 275,000	28,000,000
CzechoslovakiaLignitic Sub-bituminous Bituminous		2,250,000 54,300,000 25,800,000	2,500,000 57,700,000 29,300,000	0 0 0
East GermanySub-bituminous Sub-bit. briqu. Sifting coal Bituminous		224,060,000	248,600,000 57,600,000 19,600,000 2,900,000	
Hungary	Lignitic Bituminous	24,300,000	30,000,000	36,000,000
Poland	Lignitic Bituminous	7,541,000 94,981,000	9,600,000 103,000,000	27,000,000 111,500,000
Rumania	.Lignitic Bituminous	7,348,000	11,600,000	***
Soviet Union	Lignitic Sub-bituminous Bituminous Hard	476,100,000	593,000,000	600 to 612 million

COAL FIGURES for eastern European nations show . . .

New Outlook for Communist Coal

Changing focus on energy goals takes some punch out of crash coaldevelopment program planned by Russia and her satellites.

By F. H. Baer, McGraw-Hill World News correspondent, Vienna, Austria

AMERICAN COAL will probably not find any near-term markets in eastern Europe as that sector's figures on current coal needs are being readjusted downwards. It seems that the "East Block" is beginning to undergo some of the same unfavorable developments plaguing western coal in recent years.

Chiefly, liquid and gaseous fuels are gaining on the balance sheets of these country's primary energy lists. Such lists show an almost uniform slowing down in the annual coal output growth rates for the next two, and seven years, respectively.

In this light, three major trends can be seen developing:

1. The East Block's biggest bituminous coal producers are retarding their output, which is symptomatic of the rest of the communist coal industry. For example, the USSR had planned to produce 593 million metric tons of coal in 1960, but Nikita Kruschev's new Seven-Year Plan (1959-1966) lowered the target, demanding between only 600 and 612 million metric tons in 1965. Poland, similarly,

lowered the 1960 bituminous coal output goal from 105 to 103 million metric tons and brown coal output from 11.9 to 11.6 million metric tons.

Almost every East Block country is now stressing production of lignitic and sub-bituminous coal.

The USSR, Czechoslovakia, Poland and Rumania have announced plans to extract more coking coal.

Realistic Aims—We can conclude several things from these trends. Russia and her satellites will no longer blindly yank coal from the earth just to make a big productivity show for the rest of the world. Need will be the directing factor now.

Secondly, it can be seen that the East Block is not the economically independent unit it likes to think it is, but is largely influenced by world-wide developments. Finally, an acute look shows these nations' coal industries to be deficite undertakings subsidized by the state, indicating a lack of efficiency compared to the West.

A survey of the coal industry pattern within Russia and each of her satellites will give you a clearer picture of present and future aims:

RUSSIA: (Overall primary energy balance)-Coal made up 65% of the total primary energy in 1955,

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Coal Abroad (Continued)

59% in 1958, and will account for 43% in 1965. Oil and gas, on the upswing, have gained from 25 to 31% over these years and are pegged for 51% in 1961.

Russia's build-up program stresses the eastern areas (Siberia, Central Asia). Output there is scheduled to increase between 40 and 45% versus an overall increase between 21 and 23%. Coking coal is to increase by between 59 and 65%, to reach 150 to 156 million metric tons in 1965. New pits and open-cast mines with total capacity of 200 to 220 million metric tons must spring up from 1959 to 1965.

ALBANIA: Europe's least-developed country lives off its riches of oil and chromium ore. Coal output jumped from 37,302 metric tons in 1938 to 200,756 metric tons in 1955, is scheduled to reach 300,000 metric tons by 1960. Producing lignitic coal almost exclusively, this tiny country gets what little bituminous or hard coal it needs from the USSR, pays with land for Russian military bases.

BULGARIA: Established coal reserves total 3,660 million metric tons,

comprising about 90% lignite, 8% subbituminous, 0.4% hard and 0.8% bituminous coal. Opencast mining accounts for 73% of all lignite and 15.8% of all sub-bituminous.

Key to Bulgaria's coal future is the Maritsa-Iztox lignitic coal basin where mining will start soon, Production should hit 800,000 metric tons by 1960, 4,930,000 metric tons in 1962 and 10.300,000 metric tons after 1965, Bulgarian coal sources expect to mine 28 million metric tons of coal in the basin by 1970.

CZECHOSLOVAKIA: This country is vital to the East Block as the main coking-coal supplier, exclusive of the USSR. Because of this, a Five-Year Plan that ended in 1955 upped bituminous coal production in Czechoslovakia by 15%. Now another plan is in swing to raise output another 26% by 1960, and parallel plans call for a 46% rise in lignitic production.

The government still feels it did not fulfill its aims for bituminous coal during past years because of insufficient amounts for exports, causing frequent bottlenecks. To the contrary, lignitic coal output progressed faster than planned.

EAST GERMANY: This satellite, now the point of issue in the cold war, imports 700 metric tons of coal out of every 1,000 it consumes. Most of Germany's coal is in the western section, and East Germany's meager lignitic coal deposits have dwindled to a mere 25,000 million metric tons. Besides this, existing bituminous coal deposits are vastly depleted, setting up this country as the most likely East-Block candidate to import western coal. West Germany, now faced with drastic surpluses, is in fact, shipping coal to the eastern zone.

Poland has announced that it will ship upwards of 6 million metric tons of lignite (Silesian) coal to East Germany, whose home production for 1960 has been set at 248,600,000 metric tons of lignite, 57,600,000 metric tons of sifting coal and 2,900,000 metric tons of bituminous.

HUNGARY: The Budapest government saw no sense in continuing high-speed mining of almost worthless coal last year and reduced by 800,000 metric tons the overall 1958 output. Mining engineers estimate reserves at 4,000 million metric tons, but mostly below 3,000 keal/kg.

However, Hungary intends to spend about 1,000 million forint (\$83 million) annually to improve its coal-industry products and to increase output substantially by 1975.

POLAND: The coal industry here has had an annual deficite in recent years running about 4 million zloty (\$1 million). One new bituminous field-

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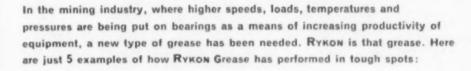
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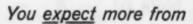






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Drilling rig	plain and anti-friction	high temperature, heavy load, wet, dirt	Replaced lithium greases.
Conveyor outside tipple	anti-friction		Permits cold weather start-up without knocking out breakers.







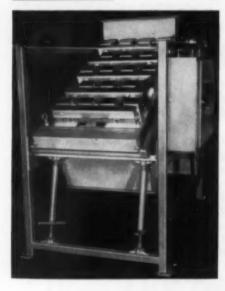
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Coal Abroad (Continued)

Rybnik, with 10,000 million metric tons reserves—will be worked between 1959 and 1965, to yield 10 million metric tons by 1965.

RUMANIA: Coal plays a small role in this oil-richest country of Europe. Half hearted attempts to develop the coal industry during the first Five-Year Plan (1951-1955) were aimed at 1955 output of 8,500,000 metric tons; actual output was more than 2 million metric tons shy of the plan.

The current plan (ending in 1960) demands a 200% increase in coking coal output, to reach 516,150 metric tons, the total coal output increase to range between 80 and 90%.

Trade Within Block—Shipments of coal within the eastern European nations will continue, mainly into East Germany (from Poland and Czechoslovakia), into Albania (from the USSR), into Hungary (from Poland and the USSR), into Rumania (from the USSR), into Czechoslovakia (from Poland) and into Bulgaria (from Russia and Poland).

While these trade agreements do not specify the amount of coal shipments, they do indicate that a country might be asked to ship bituminous coal to another satellite while receiving lignitic coal from elsewhere within the Block.

Outside The Block-Most informed authorities do not expect increased competition in the international coal market from the Soviet and its satellites. The current annual shipment of East Block coal to world markets is estimated at below 30 million metric tons, about 17 million of bituminous from Poland and 13 million metric tons of bituminous and hard coal from Russia. The latter's exports are seen as playing a far more political than economic role throughout the world and may be subject to sudden changes. Poland expects to continue its export level for at least the next 7 yr.

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Test Case—Behind all the facts and figures of coal production in the communist countries, which many experts believe are puffed up substantially, lies a much more important issue. That is whether the Marxist-Lenin theory of planned economy can realistically compete with the free-market system. Fact is, this shapes up as a real test case.

What we know so far is that the stateplanned and state-supported system envisaged by Marx and Lenin has so far been no more, in fact less, effective than capitalism. Now the communists are resetting their goals, finding the best laid plans can go astray.

What's to be done? Newest switch in the East Block's coal industry is the application of some officially condemned capitalistic rules under the heading of "re-orientation of economic policies." The West is watching patiently.

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- TOP ABRASION RESISTANCE
- BETTER FASTENER HOLDING
- FIRE RESISTANT (Fire Resistant USBM 28-1)

Scandura Gold Line Belting is "Best for the Long Haul-Best for Extensibles." It's the extremely strong, lightweight and flexible mine belting that is setting remarkable new records for long life and low maintenance wherever it is used. See your NATIONAL MINE man for the facts!



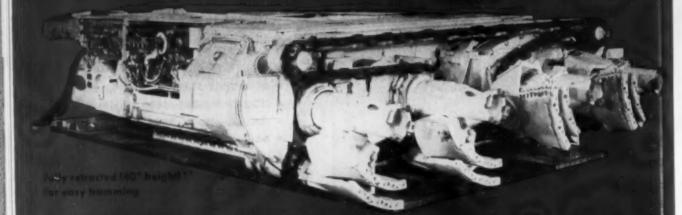
NATIONAL MINE SERVICE (CANADA) LIMITED

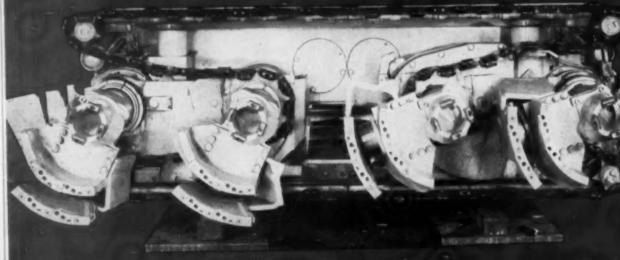
It has to be



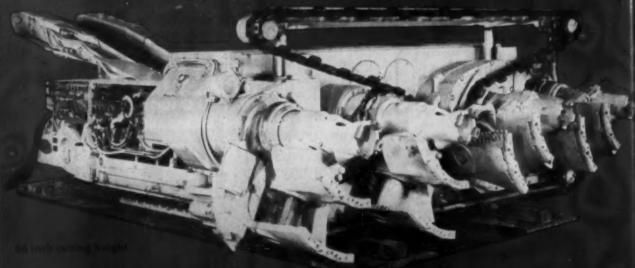
Manufactured at CHARLOTTE, NORTH CAROLINA SCANDINAVIA BELTING CO.

NEW!





48 Inch suiting heigh



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A CONTINUOUS BORER FOR COAL AS LOW AS 48"...AS HIGH AS 66"

With Variable Cutting Height While Operating

THE GOODMAN TYPE 300

Here's a rugged powerful machine for boring in lower coal measures . . . backed by dozens of high tonnage, cost reducing Goodman borer installations in higher seams of coal. And that's not all, the 300 is designed with all the maneuverability and capacity to make it profitable in all phases of development or full production work. It's a self-amortizing investment that will write itself off in terms of greater productivity and lower cost per ton in a surprisingly short time.

CHECK THESE FEATURES OF THE GOODMAN TYPE 300

- Variable cutting height, while operating, from 48" to 66"
- A one pass machine cutting a 13'10" wide path at 48" height and a 14' 10" path at 66" height
- Leaves a 12' wide flat bottom while cutting at any height
- One 250 h.p. AC or DC, totally enclosed, fan cooled, USBM explosion proof motor, that powers all functions
- Fully retracted tramming height of 40"
- Turns 90° crosscuts; follows seam irregu-

- larities by vertical or sideways tilt of cutting element
- Discharge end of conveyor swings 40° to either side
- Full hydraulic control for ease of handling
- Large, rugged parts; good accessibility for inspection and repair

Your Goodman Sales Engineer will be happy to give you the full story of this newest addition to the field of continuous mining. There's no obligation.

AT THE COAL SHOW

Two new variable height borers—the 300 (above) and 425 for higher seams. Also new—a low vein loader with 30° wide conveyor, 120 cu. ft. capacity shuttle car for low coal, a fast working rubber tired cutter, a low vein Ropebelt conveyor, an improved Wilcox auger type miner and some replacement parts well worth investigating.

. . . all at GOODMAN Area—lower lakeside hall

GOODMAN

MANUFACTURING COMPANY

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CUTTING MACHINES . CONVEYORS . LOADERS
SHUTTLE CARS . LOCOMOTIVES . CONTINUOUS MINERS

Use Genuine Goodman Replacement Parts

Current Coal Patents

By: Oliver S. North

Roof bolt extractor machine, H. W. Talkington, Feb. 10, 1959. Design for a portable, power-operated wrench for use in salvaging mine roof bolts when abandoning a section of a mine. The wheeled apparatus can be easily moved, and is specially designed so that the workman is positioned behind the bolt following that being pulled, so that danger from roof falls is minimized. No. 2,872,835.

Coal cutting and loading machine, F. J. Jones (one-third assigned to H. D. Baker, West Terre Haute, Ind.), Feb. 10, 1959. Design for a coal cutting and loading apparatus which in a sweeping action cuts and loads coal from a solid wall, thus doing away with the use of explosives. A number of advantages are said to be realized by elimination of blasting including less fouling of air with smoke and dust.

Belt conveyor and articulator therefor, C. E. McWhorter (assigned to Goodman Mfg. Co., Chicago, Ill.), Feb. 10, 1959. Improved continuous belt conveyor, wherein the conveyor is supported intermediate of its ends, to permit the swinging of one end without interruption of the flow of material. No. 2,873,021.

Self-aligning belt idler, D. D. Murphy assigned to Joy Mfg. Co., Pittsburgh, Pa.), Feb. 10, 1959. Improved idler arrangement wherein means are provided for supporting and guiding the belt and return run thereof in a vertical and very compact manner. The idler is very low in height. No. 2,873,022.

Mining planers having an impact action, J. Herrmann (assigned to Gewerkschaft Eisenhutte Westfalia, Wethmar, nr. Lunen, Germany), Feb. 17, 1959. Mining planer so designed as to utilize the irregular forward motion of the planer head to obtain increased output. The irregular motion and the variation in tension of the flexible traction element are used to produce a striking action on the cutter. No. 2,873,959.

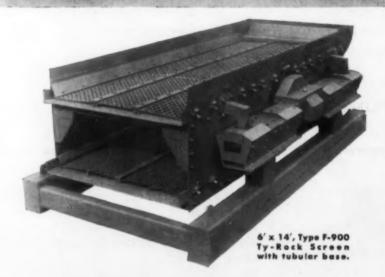
Coal cutting bit having three cutter tips, M. Y. Thorne, Feb. 17, 1959. Improved, low-cost coal cutting bit of the type having carbide inserts in the cutting points. The triangular-shaped points are protected against damage and can be kept in service for long periods of time by simply resharpening. As the center point wears down, the side points continue their cutting action. No. 2,873,960.

Mining machine having crankshaft operated ripper means, J. P. Ruth, Feb. 24, 1959. This mining machine (an improvement on that described in U.S. Patent No. 2,692,130) is characterized by excavating means which can be adjusted to work over the entire face of the seam with powerful disruptive effects thereon. The boom-mounted excavating elements can be vibrated vertically or laterally across the face of the seam as they are orbitally actuated to break and rip material from the face. No. 2,874,947.

Slack take up means for conveyor, J. Kilbourne (assigned to the Jeffrey Mfg. Co., a corporation of Ohio), Mar. 3, 1959. Design for a conveyor having a pivot section which is adapted to swing from side to side of the main frame, and including an adjustable mounted shaft around which the pivot section swings. Slack in the conveying element is automatically taken up as the pivot section is swung. No. 2,875,885.

Rigidly spaced limber idler troughing roller assembly for endless conveyor, R. F. Lo Presti and J. R. Madeira (as-

TY-ROCK SCREENS



For TOP Performance

The balanced circle-throw action of the Ty-Rock plus the full-floating action on large shear type resilient rubbers enables this screen to separate material with unequalled speed and effectiveness.

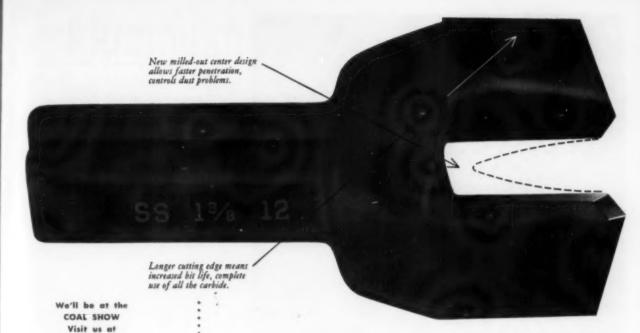
The Ty-Rock wastes no power in useless, harmful racking of buildings or supporting members. It delivers all of the intense power to the job of stratifying and separating the sizes.

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CLEVELAND 14, OHIO

Manufacturers of Woven Wire Screens and Screening Machinery



Carmet SS Style Roof Bolting Drill Bit

FREE-FLOWING BIT DESIGN CUTS ROOF HOLE DRILLING TIME

NEW CARMET
MINING TOOL CATALOG
NOW AVAILABLE FROM YOUR
CARMET DISTRIBUTOR

BOOTH 232.

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The newly revised 5th Edition of the Carmet Mining Tool Catalog contains application data and specifications on the complete line of Carmet Mining Tools, including a complete section on grinding and reconditioning. For your copy, write Carmet Division, Allegheny Ludlum Steel Corporation, Detroit 20, Michigan.

ADDRESS DEPT. CA-16

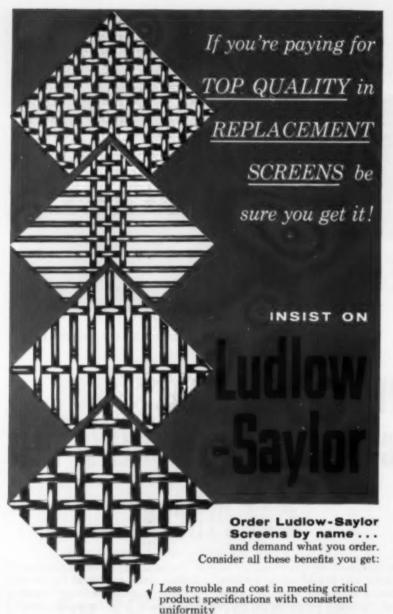
The outstanding performance of Carmet's Style SS roof drill bit has been proven over the years in tests and under actual operating conditions in mines throughout the country. This sturdy mining bit consistently drilled faster, cleaner and more accurately than others on the market.

Now, the newly modified milled-out center design of the SS Bit allows freer passage of large cuttings for even greater drilling speeds. It can save you up to 25 percent drilling time. The problem of dust control at the face is practically eliminated. The harder, more wear-resistant Carmet Carbide grades used on all Carmet mining tools guarantee a longer operating life for the SS Bit and greater economy of operation for you. Heavy alloy steel support under the cutting tip insures against carbide fracture and strong prongs insure against tool breakage. SS Bits are available in the following sizes: 1%, 1%, 1%, 1%, 1%, 1% and 1%.

See your Carmet Distributor today for more information on the SS Style Roof Bolting Drill Bit . . . and also, ask him about Carmet's complete line of mining tool bits.

WSW 7192

The Original DOUBLE-BONDED Carbide Cutter Bit



Ludlow-Saylor Screens and Wire Cloth can be supplied in any steel including SUPERLOY high carbon, LUDLOY oil-tempered, stainless and other alloys; Monel, broaze, copper, brass or any metal that can be woven into wire.

Write for Condensed Screen Reference Catalog



Reduced re-circulating loads that clog your plant

 \checkmark Increased output with faster feed across the screen

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Fewer screen replacements; less downtime and maintenance

Get a higher return on your investment in sizing equipment with quality screens that wear longer, cut costs, step up production. Order, insist on Ludlow-Saylor!

Immediate Shipment of most weaves and sizes. Stocks in St. Louis and Los Angeles

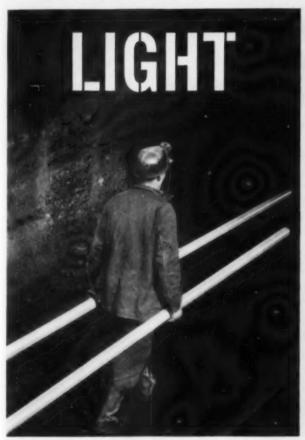
LUDLOW-SAYLOR WIRE CLOTH CO. 609 S. NEWSTEAD AVE.

GALES OFFICES: BIRMINGHAM, 1727—6th Ave. N. - CHICAGO, 6261 W. Grand Ave. - PITTSBURGH, Union Trust Bidg. - HOUSTON, 5638 Harvey Wilson Brive - DENYER, 1530 Cart St. - LOS ANGELES, Stat Wire Screen & Iron Warks, Inc. (Ludiou-Supto Subsidiary), 5315 San Fernando Read. signed to Goodman Mfg. Co., Chicago, Ill.), Mar. 3, 1959. In an endless rope sideframe conveyor, the troughing roller assembly has transversely flexible roller means and a spacer holding apart the ends of the roller means. The roller is supported at its ends by a rigid spacer frame, deflectable downwardly to absorb impact loads. No. 2,875,886.



Mining systems of the room and pillar type, C. E. McWhorter (assigned to Goodman Mfg. Co., Chicago, Ill.), Feb. 24, 1959. Layout for an improved roomand-pillar mining and loading system so arranged as to speed up mining of a section of coal, and whereby a larger proportion of coal is recovered from the seam. A pair of rooms is advanced in parallel by a single continuous mining machine alternately advancing one room and then the other by driving a communicating breakthrough to advance the adjacent room and another to return to the first room, leaving a barrier pillar and supporting pillars. Upon withdrawal, the pillars are continuously and rapidly mined and loaded out to a conveyor as the conveyor is being taken up. No. 2,874,945.

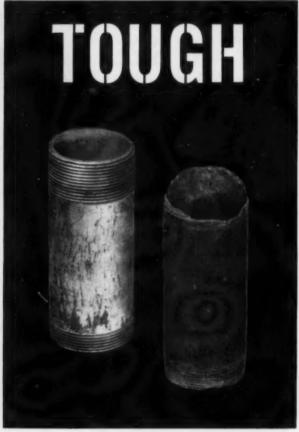
Aluminum Mine Service Pipe



One man carries two 20 ft. lengths of aluminum mine service pipe casily.

Two facts about Reynolds Aluminum pipe add up to lower cost in mine drainage service. In a recent test installation, Schedule 40 aluminum pipe was only slightly pitted after 60 days in a mine where the water contained more than 3.5% sulphur. Schedule 40 steel pipe in the same test became unusable. This obviously cuts long range cost.

Also, because of its corrosion resistance, Schedule 5 aluminum pipe can replace Schedule 40 steel at approximately the same



Aluminum pipe (left) stands up after 90 days in acid mine. Steel pipe, subjected to same test, is at right.

cost per foot, and with a savings in weight of 85%. For example, a 20 ft. section of 3" Schedule 5 aluminum pipe weighs only 21 lbs....compared to 152 lbs. for Schedule 40 steel. This, of course, means faster, easier handling and installation, and less labor.

Get details on this cost-cutting mine service pipe now. Write for "Reynolds Aluminum Mine Service Pipe" brochure. Reynolds Metals Company, P.O. Box 2346-NQ-4, Richmond 18, Virginia

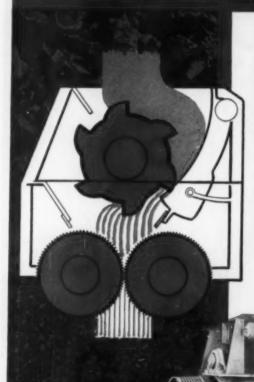
Watch Reynolds TV show-"WALT DISNEY PRESENTS"-every week on ABC-TV

REYNOLDS ALUMINUM



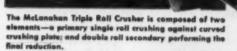
CRUSH RUN-OF-MINE TO FINE SIZES

IN THIS TWO STAGE UNIT



With a ratio of reduction, greater than ever before available, this single twostage unit does the work normally assigned to two crushers. A unique hydraulic system allows changing product size without stopping the crusher, and also protects against tramp iron.

Get All the Facts-Ask for Bulletin BDTR-57





MELANAHAN

TRIPLE ROLL CRUSHER

New Books

Electric Blasting

Handbook of Electric Blasting, by D. M. McFarland and G. F. Rolland provides down to earth information on the whys and hows of electric blast detonation. Technical terms are explained in simple language to give the inexperienced blaster sufficient knowledge to enable him to use electric blasting successfully. Some of the major topics covered are: the electric blasting cap, power source, wires that carry the current, circuit testing, blasting devices and misfires. Useful tables and graphs are provided on blasting machines, resistance of wire and caps, and electric blasting circuits. 60 pp. 4x6-in; plastic. Dept. HR, Explosives Div., Atlas Powder Co., Wilmington 99, Delaware.

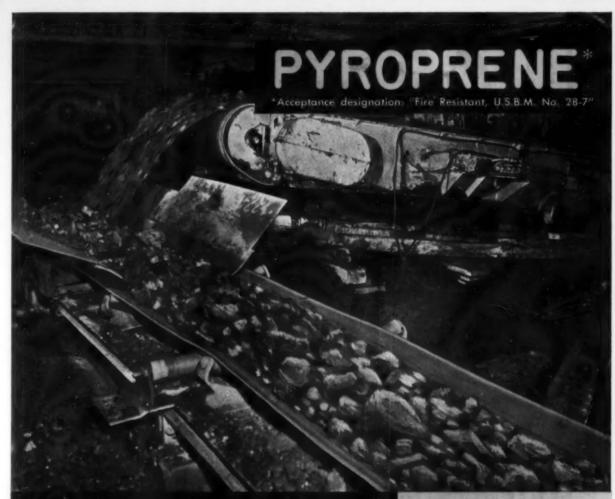
Roof-Bonding Research

Cementation of Bituminous - Coal -Mine Roof Strata: Injection of Epoxy and Polyester-Type Resins, by Earl R. Maize and R. H. Oitto, Jr. is a progress report on Bureau of Mines research on the feasibility of using chemical binders to strengthen coal-mine roof. Tests included injecting epoxy and polyestertype resins between the layers of rock overlying the thick Freeport coal in Allegheny County, Pa., to cement them together into a single strong beam in place of several weak ones. R. I. 5439, Publications-Distribution Section, Bureau of Mines, 4800 Forbes Avenue, Pitts-burgh 13, Pa.

Energy Sources

Future Energy Sources for Pennsylvania, by J. J. Schanz Jr. with R. K. Amole, D. G. Frendzel, J. N. Hoffman and W. G. Jaworek. This work is a comprehensive research study of the future energy sources for Pennsylvania. It reviews in depth the energy sources and demands for the world and the United States, compares the supply of energy that will be available to Pennsylvania from fossil fuels with expected future needs, and examines the future cost of energy from fossil fuels as well as the probable role of atomic energy. The authors draw on data gathered not only from existing literature but also from information accumulated by consulting with numerous authorities of State and Federal agencies, oil, gas, and coal companies, public utilities, railroads, financial institutions, consulting organizations and industrial associations. Charts, graphs and tables are used to illustrate key points in the study. Mineral Industries Experiment Station Circular No. 53. 166 pp. 8½x11-in; paper. Department of Mineral Economics, College of Mineral Industries, The Pennsylvania

(continued on p 62)



Ten ways a Pyroprene belt will increase safety and service

A conveyor belt's resistance to fire is of prime importance—but important, too, is its ability to outlast severe service conditions, haul maximum tonnage with no time lost for repairs and replacements. Pyroprene belting has this ability to convey more coal at less cost because it is built to combat mine service hazards.

- 1. Pyroprene belting resists fire
- 2. Will not support combustion
- 3. Not affected by oil or grease
- 4. Withstands crushing impacts
- 5. Repels moisture
- Resists mildew
 Resists abrasion
- Resists abrasion
 Resists cutting
- 9. Resists ripping
- 10. Resists gouging



MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions Acme Rubber Mfa Co . Humilion Rebber Mfa Corp.

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FLETCHER Roof Control Drills can give you MORE BOLTS per man at LOWER COST to you!

WHICH of these problems is keeping your roof control costs too high? HIGH BIT COST? TOUGH MATERIALS? SLOW BOLT INSTALLATION RATE?

In mines throughout the country hundreds of high-capacity FLETCHER Roof Control Drills are installing more bolts per man... and prolonging bit life as they do it... in many cases with a single operator. With their convenient grouping of controls; long, fast strokes in varying seam heights; compact, easily trammed frame and all-hydraulic positioning, these FLETCHER machines will actually deliver two-man results with one-man operation. Think of the seving!

There is a mine near you using Fletchers. See them in action. Ask the management about operating costs. Ask the crew what they think, They'll all tell you — FLETCHER Roof Control Drills do the best job — at the lowest cost.

FEATURES

- Jack-feed system delivers maximum smooth thrust with quick raise and return.
- Hydraulic lowering device lets you drill directly from the mine floor.
- Hydre-slide moves your drill across the place smoothly, accurately and fast.
- Compact frame and third-wheel steer makes framming quick and easy.
- Height range from 28-inches to 14-feet lets you select a drill to exactly fit your mine.
- Telescoping most gives full strake in varying seam conditions. And the new floor-te-floor most gives added safety, speed and power.

SUSTICION DRILLS

J. H. FLETCHER & CO.

P. O. Box 2143, HUNTINGTON 18, WEST VIRGINIA JAckson 5-7811 ew International tartnmovers

CAPACITIES (24 yd. scrapers, 27 yd. wagon)

DEW POWER (375 hp)

TEW SPEEDS (to 29.1 mph)

Higher speeds possible with optional equipment.

Internationa

24 cu. yd. 295 Payscraper

Overall length: 44'8". Heaped: 31 cu. yd.

> New high visibility able on all three models in either Federal yellow or color. Optionally avail-International Harvester red.

NEW positive push-type ejection assures quick clean dumping of all materials.

A-frame-type gooseneck that: 1) increases visibility; 2) distributes weight advanced lift frame construction with evenly along cross tube; and 3) protects sheaves of bowl lift system.

NEW full 90° turns with power steering.

NEW 375 hp DT-817 turbocharged 6-cylinder diesel engine. See page 4. cycle-shortening haul speeds to 26.2 mph plus unmatched maneuverability.

exclusive tapered bowl. See next pages.

NEW high 98" apron opening. See pages 2-3.

NEW automotive comfort and control features ... 16-adjustment bucket seat ... reacheasy controls ... unobstructed vision ... air brakes . . . flush deck.

tip control . . . fast acting . . . high Model 280 cable control unit . . . fingercapacity . . . simple adjustments . . . ess maintenance. See 3-axle models on inside pages...



Here in the 27 cu. yd. International 495 Paywagon is everything that's new and productively different in bottom dump design. New 375 hp engine for greater power per struck yard than any comparable rig. New higher side and rear end clearance to roll away from any dumped load. New power-opened clamshell doors for positive controlled dumping. New wiper plates put 100% of each load on the fill. New automotive comfort and control features that let the operator produce more with less effort. New full 90° turning in either direction. New low design for haul road stability.

New exclusive poweropened clamshell doors
afford positive controlled dumping. Operator spot dumps entire
load or windrows material in
lifts from a few inches on up.
Wiper plates shave all material
from doors as they raise. Doors
gravity close, eliminating complicated mechanism.

dumping clearance lets rig pull fast from fill with no danging doors dragging on dumped material. Open rear frame lets ladder spillage fall through — prevents buildup of "free loading" material.

375 HP 495 prime mover gives both 495 Paywagon and 495 Payscraper more hp per struck yard with less gross weight per hp than any similar sized earth mover. Speeds to 29.1 mph. 10'8 1/4" wheel base. Full 180° non-stop turns can be made within 39'113/4"."







NEW high speeds big capacities

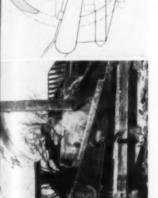
unmatched control fast dumping

This new International 495 Payscraper boils a heaped load into a 24 cu. yd. bowl in less time than any other three-axle scraper full 90° turns . . . more hp per struck yard than all competitive units... wheels and bowl leveling adjustment... advanced sheave in its class and hauls it at speeds up to 29.1 mph. The trailing unit, common to the 295 Payscraper, offers this unmatched combination of features that cut dirt costs: big 131-in. cutting width . . . tapered bowl permits efficient ejection of all materials with equal ease . . . positive forced ejection . . . improved lift frame construction . . . bearing design . . . and custom designed cable control unit.

sign: 1) permits scraper and pusher to work inside cut for Exclusive tapered bowl debest traction, less wear on tires, and tracks; 2) causes dirt to boil toward center, reducing side spillage; 3) extra wide bowl bottom provides wider spread, speeds dirt breakaway and lets scraper work cuts against banks.

Positive forced ejection dumps all materials - even wet or frozen clay and gumbo cleanly and quickly. Six large ball bearing mounted rollers center and guide ejector gate, have 240-hour lube intervals.

plus no bowl cross member permits sure ejection of all materials. Apron opened by exclusive, rear-controlled mechanical linkage. Apron is synchronized with ejector for positive controlled spreading.



Tapered bowl design 131 In.





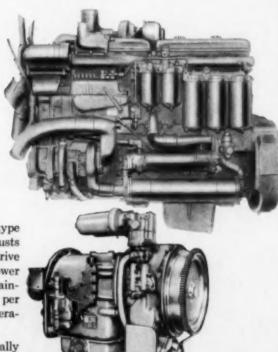


New Turbocharged International DT-817 powers all three giant earthmovers

- Develops 375 hp @ 2100 rpm
- Direct push-button, 24-volt starting
- Positive valve rotators increase valve life
- Aluminum alloy pistons for fast heat dissipation
- Wet sleeve construction provides additional cooling
- Fully counterbalanced crankshaft for smooth engine performance
- Dual intake and exhaust valves for peak engine efficiency
- Twin plunger injection pump precision meters fuel
- Hang down type replaceable filters for maximum fuel and oil filtering efficiency
- Tri-metal crankshaft bearings for long trouble-free service

Both prime movers are available with 4-speed, planetary type torque converter power shift transmission. It automatically adjusts output torque and speed to fit load requirements. Torqmatic drive makes more power available over the entire range; applies power smoothly and continuously, resulting in less wheel slippage; maintains high tractive effort; and cuts the number of gear shifts per cycle, letting operator concentrate on loading and spreading operations.

A constant mesh 9-speed manual shift transmission is optionally available on both prime movers.



See your International Construction Equipment Distributor for complete information on these NEW International Earthmovers

International



Construction Equipment

International Harvester Co. • 180 N. Michigan Ave., • Chicago 1, III.

A COMPLETE POWER PACKAGE: Crawler and Wheeler Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Questions

We've been asked about the Yieldable Arch



"How do you determine the spacing between Yieldable Arch sets?"

In general, Yieldable Arch sets are spaced 3 to 4 feet apart, though we know of installations where spacing ranges up to 6 feet. The important thing, always, is to space the sets closely enough so that the Arches and not the lagging will do the yielding. As a rule, the softer and heavier the ground, the closer the spacing.

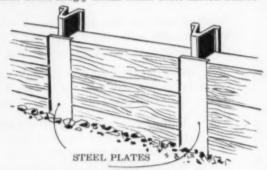
For lateral stability, each Yieldable Arch set should be tied to its neighboring set with channel struts and J-bolt clamps furnished by Bethlehem especially for this purpose. This strutting is usually installed at five points along the periphery of the Arch.

SEND US YOUR QUESTIONS

You probably have other questions of a specific nature, concerning the application of the Yieldable Arch or Ring to your mine. If so, by all means send them in; we will study your problem and reply as promptly as possible. Write Room 1041, at the address below.

"What method can you suggest to prevent scrapers from catching on the legs of Arches?"

A Michigan mine solved this problem by welding plates—about ½ in. x 5 in. x 24 in.—to the exposed edge of the legs, and then placing 4 in. x 6 in. timbers behind the plates. The timbers were notched so that the steel plates fitted snugly inside them. Note sketch below.





"Is the Yieldable Arch easily adaptable to such techniques as spiling and forepoling?"

Yes. And many mines right now are using their Arch sets in conjunction with these mining techniques.

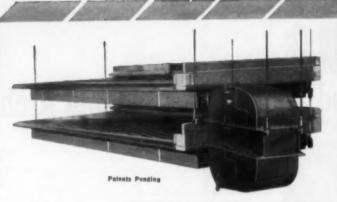
In some upper Michigan mines, pipe spiling is used to protect the men at the face. Above the top blast holes, and angled slightly upwards, 4 to 8 holes $1\frac{1}{2}$ in. in diameter are drilled 10 ft deep. One-inch pipes are inserted over the tops of the arch sets at the face, and the round is blasted. Pipes give support during mucking out, until next steel set can be placed (see photo above).

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corp. Export Distributor: Bethlehem Steel Export Corp

BETHLEHEM STEEL





Here is a MAJOR ECONOMY in Coal Preparation

Washed coal in fine sizes is now prepared most economically with the CONCENCO® "77" twin deck table that operates in floating suspension.

This revolutionary concept that doubles washing capacity in a given unit of space is proving its worth in many ways.

- (1) Where more capacity is needed, the "77" table provides up to twice as much without expansion of floor area.
- (2) Where space economy is necessary, the same capacity is maintained in reduced operating area.
- (3) When capacities must be more than doubled, new housing may be of lighter construction because floating suspension minimizes operating impact to structures.

Send for Bulletin 77.



CONCENCO® Spray Nozzles

These handy nozzles are simple, flexible and economical. All you do is drill oversize holes in spray line, one per nozzle, clamp on and get results. They can be definitely aligned for washing, sluicing or spraying according to need. They are removed or replaced in a moment's time.

See us at the American Mining Congress
COAL SHOW BOOTH NO. 2110



* The ORIGINAL Deister Company • Inc. 1906

Books (Continued)

State University, University Park, Pa.

Stripping Reserves

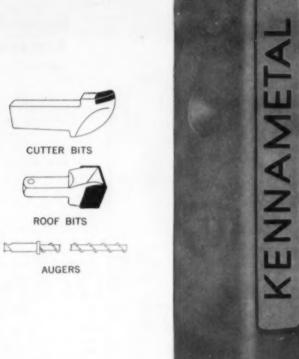
Strippable Coal Reserves of Illinois, by W. H. Smith is the second of a series of reports planned by the Illinois State Geological Survey to summarize available information concerning strippable coal in Illinois. This report covers the following five southwestern counties: Jackson, Monroe, Perry, Randolph and St. Clair. Much of the information is shown on maps which indicate outcrops, thicknesses of coal, thicknesses of overburden, reliability of estimates and areas of coal mined out. 34 pp. 6%x10-in; paper. Circular 280. Illinois State Geological Survey, Urbana, Ill.

International Coal Classifications

The International Systems of Hard-Coal Classification and Their Application to American Coals, by W. H. Ode and W. H. Frederic classify hard coals on the basis of three characteristics. A three-figure code number is used to designate a coal's class (determined by volatile-matter content), its group (determined by caking properties), and its sub-group (determined by coking properties). American coals classed as anthracite, bituminous and higher-rank subbituminous are covered by the systems. The report gives the codes for about 80 coals, representing every coalproducing state in the U.S. Also included are designations of the ASTM and proximate and ultimate analyses. Bureau of Mines Report of Investigations 5435. 20c, Superintendent of Documents, Government Printing Office, Washington 25, D.C.

Coal-Mine Explosions

Historical Summary of Coal-Mine Explosions in the United States, by H. B. Humphrey describes coal-mine explosions from 1702 through 1957 and explains the practice and failures that have been mainly responsible for these disasters. The source of the author's material has been the product of the experience and thinking of many men in the Bureau of Mines and other organizations who not only have participated in rescue work after fires and explosions but also have investigated the causes of hundreds of disasters. Reports of research on causes and prevention of explosions also provided information for this work. Operating, engineering and safety officials will find this volume informative and useful in preventing future disasters. 275 pp. 8x101/2-in; paper. Bureau of Mines Information Circular 7900. \$1.50, U.S. Government Printing Office, Washington 25, D.C.





FOR THE LATEST DEVELOPMENTS IN CARBIDE MINING TOOLS . . . LOOK TO KENNAMETAL* FIRST



EXIDE-IRONCLAD BATTERIES

-best buy for the long haul

More ton-miles per dollar—that's the reason most cost-conscious mine operators prefer Exide-Ironclad Batteries for mine locomotives.

Experience has proved over the years that no other battery make matches Exide-Ironclad for average life in service and tonnage hauled. Rating for rating and dollar for dollar, Exide-Ironclad gives you more real value... more return on your investment.

Today's Exide-Ironclad features improved tubular construction, making it even better than the models that chalked up the industry's records. So you can expect even longer life potential and superior performance.

Total work output, not mere price, is the key to battery economy. When you buy batteries, specify Exide-Ironclad and get the most production capacity your dollar can buy. For details, write Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 20, Pa.



50 years ago, Exide patented the nowfamous Exide-Ironclad tubular positive plate battery. For power and economy, nothing has ever matched it. Yet Exide engineers have constantly improved it. Today's battery packs more power, gives longer life and greater economy than ever before.



Equipment Approvals

Nine approvals were issued during February.

The Long Co.—Model 125-A utility truck; one motor, 1½ hp, 36 V, DC. Approval No. 2F-1437, Feb. 12.

The Long Co.—Model 125-B utility truck; one motor, 1½ hp, 36 V, DC. Approval No. 2F-1438, Feb. 12.

Henna Coal Co.—Rebuilt Type 3JCM-5H Joy continuous mining machine with mounted drills; seven motors, two 100 hp, one 50 hp, and four 7½ hp, 440 V, AC. Approval No. 2F-1439A, Feb. 12.

Canadian Ingersoll-Rand Co., Inc.—Model 3 CML 100 continuous mining and loading machine; three motors, two 50 hp and one 1 hp, 500 V, AC. Approval No. 2F-1440A, Feb. 12.

Goodman Mfg. Co.—Type 870-20 shuttle car; three motors, each 10 hp, 250 V, DC. Approval No. 2F-1441, Feb. 18.

Ensign Electric & Mfg. Co.— Bulletin 5411, Type D. S. pumping unit; one motor, 15 hp, 250 V, DC. Approval No. 2F-1442, Feb. 20.

Lee-Norse Co.—Model CM37-1M continuous mining machine; three motors, each 50 hp, 550 V, DC. Approval No. 2F-1443A, Feb. 20.

Ensign Electric & Mfg. Co.—Bulletin 5412 Type D. S. pumping unit; one motor, 3 hp. 440 V, AC. Approval No. 2F-1444A, Feb. 26.

Goodman Mfg. Co.—Type 870-21 shuttle car; three motors, each 10 hp, 250 V, DC. Approval No. 2F-1445, Feb. 26.

In addition, symbol No. 127-BM was assigned to the Chester Cable Corp. to identify cables that have been accepted by the Bureau as flame-resistant.

Preparation Facilities

South-East Coal Co., Paintsville, Ky.—Contract closed with Jeffery Mfg. Co. for two 84-in, 3-compartment, 8-cell Baum jigs, one right hand and one left; for handling 900 tph of 8x0 in raw coal.

Ponfeigh Smokeless Coal Co., Berlin, Pa. -Contract closed with Jeffery Mfg. Co.

COA



- Making New Records! Galis

To Save Money on Safer Roofs,

the Galis Roofmaster Gives You

Record Bolting—156, 42" Bolts in 5 Hours Operation
in Southern W. Va. Mine. (Name on request)
Tram speed variable to 188 ft. per min. Drill speed
variable to 475 RPM.

Start Drilling 61/2" from Mine Floor with 24" machine.
No changing of Feed Parts or other parts of Machine for seam heights of 28" to 84" and up. Greatest Drilling Economy

53" Auger Feed with In-through Auger Dust Collection. Hydraulic tram individual drive, 4 wheel drive. tive control. Three point suspension 4 wheel drive. Greatest Maneuverability

Overall height, 24". Ground clearence, 5". Overall length with 160".

Cable reel. 174". Overall length without cable reel. 5tandard

Cable reel. 174". Overall length without cable reel. 5tandard

Overall width, 61" over whosels. 5" stabilizing fack. Standard

Overall width, 61" over whosels. 5" stabilizing Available M.P.,

Tank capacity, 60 gals. Available M.P.,

Teed length, 53". Oil Tank capacity, 60 gals.

Platform for personnel and supplies. Cable real [Horizontal real personnel and supplies. Cable real In-auger with spooler). Thru-auger automatic dust collecting. Coal automatic dust collecting. Internal auger dust collecting laternal automatic dust collecting. Brushing Attachment. Muriler fer drill. Timber Saw. Roof Brushing Attachment. WRITE NOW, RIGHT NOW!

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For REPAIRS OF ALL UNDERGROUND MINING EQUIPMENT

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NO ROADS ... CARRY 30 TONS OR MORE OVER ROUGH MOUNTAIN, DESERT AND JUNGLE TRAILS

Shown here crossing the Pakistan Desert, are Elegangle matric Transporters built by R. G. LeTourneau, In lotation. These, and machines like them, have penetral never wear many of the world's roadless wilderness are the Trans Carrying 30 to 100 tons or more, these unique convention vehicles use the tremendous power and traction tures you Electric Wheels to carry payloads up 30% mountain grades, over soft desert sand and gume Call or we



ELECTRIC ARCH skids 30 tons of logs from rugged timber areas. Coming downgrade, regenerative electric braking holds Arch and 30 tons of logs safely, surely at selected speed. Brakes have no wearing parts.



ERECTOR picks up, transports and places Corporal Guided Missile at launching site. All movements are powered and controlled by standardized, trouble-free electric com-ponents built by R. G. LeTourneau, Inc.



AIRCRAFT TOW TRACTOR pulls 250-1 plane on glare ice. Electric Wheels g "soft" starts, permitted by infinite rat of power control from zero to full spe Special "ice gripper" for slick surface

REE CRUS TREE CRUS
Drive to ro
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pletely flatte



5-year performance on every continent proves out Electric Drive by R. G. LeTourneau, Inc.

The Electric Wheel, a highly-advanced drive system manufactured by R. G. LeTourneau, Inc., is now in use on every continent – in opposite extremes of climate, and in widely varied industries. Machines equipped with Electric Drive have fully demonstrated their superiority in getting more work done, faster, and at lower costs than can be accomplished by machines with conventional drive.

Simplicity, ruggedness and tremendous power are what you get with the Electric Wheel system. The Electric Wheel itself has a DC electric gearmotor mounted in the hub, powered by a self-contained diesel-electric generating system. Every wheel is a driving wheel. Power is automatically and instantly transmitted to the wheels with best traction; transmissions, driveshafts and differentials are completely eliminated.

Extensive development of the Electric Wheel system has created a complete family of integrated, efficient and trouble-free components—all of which we make ourselves. This includes the generators, electric motors, switch gear, gear reduction—in fact we even make the steel. The result is unusual dependability and performance.

"COAL STRIPPERS-SEE US AT THE COAL SHOW.

Electric Drive Earthmovers offer great new productivity. One of several new types is shown below. Consider them now for your next BIG stripping jobs. See us at the Coal Show or write 2395 South MacArthur, Longview, Texas."

ungle mud. Huge, low-pressure tires for high lotation...all-wheel drive...electric brakes that never wear out, are some of the features that make the Transporter a successful cargo hauler where conventional machines have failed. These are features you can now get in earthmoving machines, built for the BIG construction and mining jobs. Call or write for more information.



R.G. ETOURNEAU INC



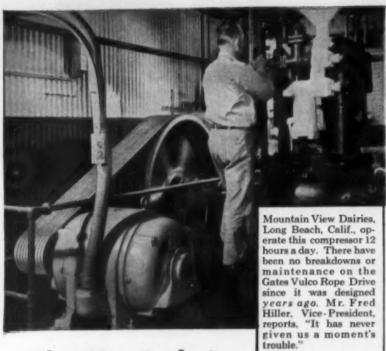
REE CRUSHER adapts powerful Electric Drive to rollers. Tremendous traction alows Crusher to clear 2 to 4 acres of forest per hour. Trees and underbrush are completely flattened for quick site preparation.



ELECTRIC FURNACE STEEL is made and rolled in our own mill for high quality, availability and production economies. We also make all components... including electric motors... used in machines shown here.



New EARTHMOVING EQUIPMENT. L-50-Ton Digging Scraper has all-wheel Electric Drive...electric controls...self-loads 50 tons in double buckets. Write for details on BIG equipment in new earthmoving line.



The No. 1 choice of industry everywhere

...the V-belt with concave sides

To prove to yourself why concave sides give this V-belt far longer life, make this simple test: bend a Gates V-Belt as if it were going around a sheave. Feel how the concave sides (Fig. 1) fill out... become perfectly straight (Fig. 1-A).

Note how the belt makes full contact with the sides of a sheave... grips evenly, thus distributing wear uniformly along the sides of the belt. Uniform wear lengthens belt life—keeps costs down.

With a straight-sided belt (Fig. 2) the sides bulge out when the belt is bent, and wear is concentrated on the bulge (Fig. 2-A). Uneven wear shortens belt life—increases belt costs.

Because Gates V-Belts with concave sides are so universally preferred, they are the most widely available. There are Gates Distributor stocks in industrial centers throughout the world.



The Gates Rubber Company, Denver, Colorado
Gates Rubber of Canada Ltd., Brantford, Ontario

Gates Vulco Drives

Prep. Facilities (Continued)

for one 1-compartment diaphragm jig.

Pine Hill Smokeless Coal Co., Garret, Pa.

-Contract closed with Jeffery Mfg. Co.
for one 2-compartment diaphragm jig.

Tunnel Ridge Coal Co., Schuylkill, Pa.— Contract closed with Deister Concentrator Co., Inc., through the Phoenix Contracting Co. for two Super-Duty Diagonal Deck No. 7 washing tables, to handle No. 4 buck size anthracite.

West Virginia-Kentucky Coal Co., Mc-Andrews, Ky.—Contract closed with Deister Concentrator Co., Inc., for two Concenco "77" Diagonal Deck washing tables with twin-decks, to handle 1/4x0 bituminous coal.

Benjamin Coal Co., La Jose, Pa.—Contract closed with Wilferd L. Roller Co. for a prefabricated heavy-media coal washer to clean 150 tph of %x5 in coal. Completion scheduled for April 1, 1959.

Slab Fork Coal Co., Alpoca, W. Va.— Contract closed with Eimeo Corp. for 6-ft dia by 5 Disc Agidisc platformassembled unit to dewater 28x0 mesh coal, 2½ tph.

Meetings

Indiane Coal Mining Institute, annual meeting, April II—Hotel Deming, Terre Haute, Ind.

West Virginia Coal Mining Institute, spring meeting, April 17-18, sponsored jointly with the Central Appelachian Section, AIME, and the Coal Div., AIME—Mont Chateau Lodge, Cheat Lake, Morgantown, W. Va.

Colorado School of Mines, Third Symposium on Rock Mechanics, April 20-22—Golden, Colo.

Ohio State University, Mining Engineering Div. Annual Conference for Engineers, Symposium on AC Mining Systems, May I —Ohio State, Columbus 10, Ohio.

Bituminous Coal Research, Inc., Annual Meeting and Techno-Sales Conference, April 21-22—Sheraton Hotel, Chicago, Ill.

Appalachian Underground Corrosion Short Course, June 2, 3 and 4—West Virginia University, Morgantown, W. Va. Thirty-eight papers on underground corrosion, exhibits by manufacturers and suppliers.

National Coal Association, 42nd Annual Convention, June 3 and 4—Shoreham Hotel, Washington, D. C.

West Virginia School of Mines, Mining Extension Dept.'s Ninth Annual Short Course in Coal Preparation, June 8 to July 17Presenting...
The new
Tailor Stream-Flo
Thermal Dryer
BOOTH 1729
COAL SHOW
Cleveland

FAIRMONT MACHINERY COMPANY

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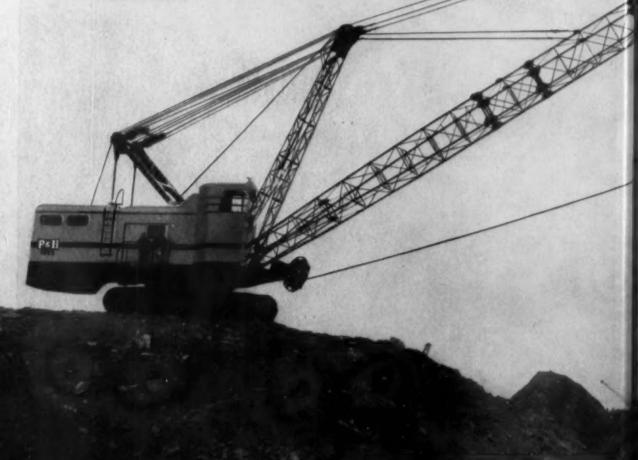
FABRICATORS and CONSTRUCTORS

COAL AGE . April, 1959

69

AT SULLIVAN TRAIL CO.

Illustrated is one of two P&H Model 1855 Electric Long Range Draglines—and one of the seven P&H Excavators owned by Sullivan Trail Coal Co., West Pittston, Pa. It is shown stripping anthracite coal near Hazelton, Pa. The P&H 1855 is rated up to 10 cubic yards as either a Long Range Dragline or Stripper Shovel.



P&H BOOTH 701

VISIT US AT A.M.C. COAL SHOW

COAL COMPANY...

One P&H always
sells another because
P&H "PROFIT-YDS."
reduce open-pit
stripping costs
all day...every day

Faster swings, higher line speeds, greater line pulls and maximum availability all add up to lower cost per yard stripped.

Continuous, high production stripping with P&H Electrics in open-pit mining the world over is the end product of these patented principles:

MAGNETORQUE®...this drive electro-magnetically transmits power from a single A.C. motor to all work motions—drag, hoist, swing and propel. Because of Magnetorque the P&H 1855 swings at speeds unmatched for draglines of such long booms and large buckets.

ELECTRONIC CONTROL . . . the most responsive electric excavator control, which provides the fastest work cycles known on electric shovels and draglines.

Also, with P&H you get single source responsibility—an exclusive advantage experienced only by users of P&H Electrics. P&H manufactures their own electrical equipment—designed specifically for electric shovel service—as well as mechanical equipment.

These patented P&H design principles offer more net profit to users—up to 10% more production, as much as 60% less electrical maintenance expense and downtime reduced as much as one half from that usual to excavators of this size.

MINING EXCAVATORS

HARNISCHFEGER CORPORATION Construction & Mining Division Milwaukee 48, Wisconsin

PaH ELECTRIC SHOVEL LINE: 3% through 10 cu. yd. capacities

HINGED PLATEGRIP

BELT FASTENER No. 500

FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from ¾" to ½" thickness. They offer special advantages in mines, quarries or industrial setups where length or position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

Write for Circular



Meetings (Continued)

West Virginia University, Morgantown, W. the United Mine Workers Union.

Va. The strike, leaving about 3,100 of the

Open Pit Mining Association, June 18— Missouri School of Mines & Metallurgy, Rolls, Mo.

Air Pollution Control Association annual meeting, June 22-26—Hotel Statler, Los Angeles. Technical sessions and exhibits devoted to air pollution control.

Rocky Mountain Coal Mining Institute, June 28, to July I—Antlers Hotel, Colorado Springs, Colo. Subjects include modern mining methods, new equipment, safety, etc.

International Briquetting Association, Briquetting Conference, August 24, 25 and 26—Glacier Park Lodge, Glacier Park, Mont.

Gordon Research Conference, June 15 to Sept.—Colby Junior College, New London, N. H., New Hampton School, New Hampton, N. H., and Kimball Union Academy, Meriden, N. H. Lectures and conferences to stimulate research in science.

The Council of Underground Machinery Manufacturers, Mining Machinery Exhibition, July 9-18—Grand Hall, Olympia, London, Eng. Includes display of mining equipment made during last decade.

News Roundup (from p 30)

the United Mine Workers Union.
The strike, leaving about 3,100 of the country's 5,000 miners idle, is the answer to the Harlan County Coal Operators Association's refusal to consent to a \$2 wage boost stipulated in the new contract signed by the UMW and the Bituminous Coal Operators Association.

Claiming only the "king-pin" coal firms can absorb the \$2 hike, the small operators asked the union for a new or separate wage plan geared to output. To sign the contract agreed to by the Bituminous Coal Operators Association would mean "certain bankruptcy," said Cloyd McDowell, secretary of the Harlan coal group. Up to now only five large mines in the county have signed the agreement raising the daily basic rate to \$24.25 a day.

Harlan County was the site of violent strife and bloodshed in the strikes of the early 1930s, however one mine owner in the vicinity reports that nothing even approximating the feeling of those times exists today. "We're not mad at the men and they're not mad at us," he stated.

Cut Coal Rate

Despite the fact that the second part of the \$2 wage increase to the United Mine Workers became effective April 1, some coal prices went down.

Thirty railroads working through the Traffic Executives Association of Eastern Railroads and 100 coal companies have banded together to offer Consolidated Edison Co. of New York, Inc., a cheaper coal rate in order to stave off a move by the large utility to substitute low-priced oil from Venezuela.

The Interstate Commerce Commission

MO

COAL A

SEEN at Snap Creek Coal Co., Logan, W. Va., are: W. H. Campbell (left), tipple foreman; R. Canada, laboratory; and S. Fisher, construction foreman.

VISIT OUR BOOTH 817

COAL SHOW — CLEVELAND

PUMPS: Plunger, Spray, Fire,
 Centrifugal and Replacement Parts

BRONZE: Bearings, Replacement Parts

 ELECTRICAL: Headlights, Starters, Switches

FLOOD CITY BRASS & ELECTRIC CO.
JOHNSTOWN, PA.



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GREAT

CLEVELAND BOAL SHOW



over 1/2 millions

SOWTY MINING EQUIPMENT LIMITED . ASHCHURCH . GLOS . ENGLAND

Drawey Corporation 25 Beaver Street . New York 4

DOWTY - World Pioneers of Hydraulic Roof Control

MONARCH

DUKE



100-Ton Truck To Visit U.S.

Billed as the "world's largest," the Berliet T-100 truck will be represented by a similar model at the International Petroleum Exposition, Tulsa, Okla, May 14-23. Designed originally to haul oil-drilling equipment across the Sahara, the truck, with modified designs, is being considered for all types of heavy hauling, including coal, and either as a dump truck or as a tractor for pulling semi-trailers. It is powered by a 600-hp engine and was developed and built by Automobiles M. Berliet, Lyon France.

Specialists in Extractive Industries

For more than a century F. S. Smithers & Co. has been providing continuous investment guidance to institutions and individuals—devoting particular attention to securities of companies extracting nature's raw materials. One of our major interests in recent years has been bituminous coal.

Our services to the coal industry, besides placing substantial blocks of coal company stocks with professional investors, have included financial appraisals and timely studies, such as the current one entitled "Consolidation Coal Company—Its Markets and Its Outlook."

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1857-102 Years-1959

Coal Rate (Continued)

approved March 3 a reduced rate tariff for coal shipped to Con Ed, which had planned to cut its yearly use of coal from 5,500,000 tons to 3 million tons. Under the new tariff the railroads reduce the price on bituminous coal over 3 million tons by 50c only if the utility buys its full 5,500,000 tons. The coal firms, the main suppliers said to be Consolidated Coal Co., Island Creek Coal Co. and Pittston Co., are giving Con Ed a 25c-across-the-board reduction on all purchases, bringing the price down from \$5.10 to \$4.85 a ton.

Formula price cuts on steam coal have also been worked out on purchases by the Long Island Lighting Co., the Jersey Central Power & Light Co. and utilities in Philadelphia, Atlantic City, Baltimore and Delaware, but rail cuts in this group still have not been approved by the ICC.

Bituminous Output

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YEAR TO DATE PRODUCTION

March 21, 1959 91,145,000

March 22, 1958 93,825,000

1959 output 2.9% babind 1958

1959 output 2.9% behind 1958. A month earlier output was 2.4% behind 1958.

March 21, 1959 7,695,000 March 22, 1958 7,596,000

Anthracite Output

YEAR TO DATE PRODUCTION

March 21, 1959 4,905,000
March 22, 1958 5,061,000
1959 output 3.1% behind 1958.
A month earlier output was 2.0% behind 1958.

March 21, 1959 386,000 March 22, 1958 328,000

74

Rip and Doze with the D9faster, cheaper than blasting





This CAT D9 Tractor with No. 98 Bulldozer and No. 9 Ripper is saving money and time for the E. M. Motter Coal Co. at this strip mine at Woodland, Pa. Ripping sandrock and shale for a 3-yd. Lima stripping shovel, the D9 is cutting costs to a minimum. It also handles more than its share of overburden, 250 cu. yd. per hour. On the spoil bank, the D9 handles up to 500 cu. yd. per hour.

"The D9 has increased our production and saved us considerable expense in blasting costs and time consumed," Mr. Motter reports. His foreman, Niram Whitton, adds, "We move 50% more dirt since we added the No. 9 Ripper."

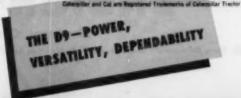
Strip mine owners everywhere are reporting great savings and increased production when they switch over from shooting coal to ripping and 'dozing with the D9. Two sizes of rippers are available: the Caterpillar No. 9 Ripper for seams up to 28-inch thickness; and the giant Kelley Ripper for seams up to 5 feet.

Not only will the D9 with either ripper break up overburden and coal, but it's ready for long, low-cost hours of spoil reclamation after it finishes ripping.

Available with either torque converter or direct drive with the exclusive Caterpillar oil clutch, the D9 is ready to give you the most economical big-volume production you've ever experienced. Get in touch with your Caterpillar Dealer. Let him show you, at your mine, how the D9 with No. 9 Ripper or Kelley Ripper will cut your costs on ripping overburden or coal. Have him demonstrate the high production 'dozing of overburden and spoil, too. He has the best buy for you—and the best after-sale service and parts.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR



For Millisecond Delay Blasting PRIMACORD



are now available in three periods: 5, 9 and 17 MS

A Primacord MS Connector consists of a metal tube 2% inches long, containing an element that produces a delay measured in 5, 9 or 17 MS. A foot of Primacord is crimped in each end of the tube. The Primacord trunk line is cut between holes and the MS Connector joined to each of the two ends with a tight square knot, or lapped with pressure-sensitive tape. Packed 50 to a cardboard tube, 500 to a case.

16 mm movie film from which this enlargement was made

*Manufactured by E. I. duPont de Nemo Available through explosives suppliers

This unretouched photograph was enlarged from a 16 mm frame. It shows a multiple hole blast detonated with Primacord, and hooked up with Primacord MS Connectors in the trunk line. Note the steady progress of this blast from the point of initiation at the left, as indicated by the red line. Millisecond detonation of Primacord down lines in medium size holes offers many advantages in multiple hole blasting. Millisecond delay relieves burden, results in improved fragmentation. Less explosive may be required than for comparable instantaneous

blasting. Decreased vibration and concussion, controlled throw and reduction of bootlegs are other advantages. Under certain conditions the danger of cut-off holes can be minimized when Primacord MS Connectors are used on the order of 5, 9 or 17 milliseconds. In any event, the presence of unexploded powder in the muck is less hazardous when Primacord is the detonating agent. It cannot be set off by stray electrical currents,

sparks, or ordinary shock, but must be detonated with fuse and cap

or electric blasting cap.

For more information see your explosives supplier or write to

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut . Since 1836

Safety Fuse, Primacord® and Detacord® Detanating Fuse, Ignitacord®, Quarrycord®, Pyrotechnical Devices and Blasting Accessories April 1959 · COAL AGE Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry



APRIL, 1959

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IVAN A. GIVEN, EDITOR

Full Measure

The picture in coal and steel operations in the first quarter of 1959 is one of major contrast in level of activity. In other words, while steel has been racking up near or all-time-high weekly records in production, coal has been drifting at a level well under what it should be enjoying with a high-level economy. But it would seem inevitable that if the economy continues to gain, coal will share in the pickup.

U. S. coal does not stand alone in wrestling with a low rate of output and wondering when it will show the rise it should. With minor exceptions, the condition is worldwide. Even Russia, which has kept the pressure on for years, shows signs of easing off and some now expect her to stop when she reaches around 650 to 700 million a year. One by-product of the development of coal and competitive fuels in the Communist-bloc countries is the growing likelihood that they will make little or no effort to ship into other areas, particularly Europe. Thus, in what basically will remain a major market, the U.S. quite likely will escape serious competition from Russia and her satellites.

As for that overseas market the recession and the rise of competition abroad continue to restrict shipments from the U. S., complicating the situation here brought on by our own recession. One result is a rush of material in the public prints implying or directly stating that coal is again slipping and has at best a dark future.

Again it should be noted that forecasts of doom-from both without and within —are nothing new for coal. Troubles the industry has, but they are different only in degree from those it has lived and coped with for many years—incidentally with increasing success. That they continue does not alter the basic fact that as the economy grows and energy demands grow with it, here and abroad, coal will grow also.

Any action the industry can take, individually or in concert, to meet competition, win public respect and confidence, and make coal's voice more effective will of course increase its stature and enlarge its opportunity to serve the growing energy market. Organization of the National Coal Policy Conference certainly fits in with that concept. Wholehearted support will help mightily in making its program yield a full measure of benefits.



ON THE MISSISSIPPI coal shipments rose from 1.3 to 3 million tons between 1951 and 1957. Peabody Coal's loading dock (above), East St. Louis, Mo., is the largest of its type on the river. It is equipped to handle 19 barges simultaneously.

On big and small rivers story is the same . . .

Barged Coal Due for Bigger

All signs point to increasing dependence on river movement of coal. The major payoff: Stronger competitive standing —now and in the future—with "blue-chip" customers and prospects in the utility, steel and industrial markets.

By W. A. Raleigh Jr. Associate Editor, Coal Age

DEVELOPMENTS in river transportation are pointing the way to new competitive gains in coal merchandising. For producers already having river access, or for those seeking same through property purchases, the new gains can take the form of:

Strengthening present competitive advantages in utility, steel, industrial and other markets.

 Anticipating future competition from "freightless" nuclear power.

 Eliminating high-cost rail transport as a block to new customer sales.

Developments setting the stage for increased use of river transport are the following: Persistent growth in barge movement of bituminous as a percentage of total production.

Unchecked momentum in the migration of industrial plants to river areas where ample supplies of water and low-cost transport are available.

 Aggressive modernization of inland waterway navigation systems to anticipate heavier traffic loads.

 Continuing improvement in the design of tow, barge and dock equipment to provide more efficient haulage and handling.

Most active river modernization programs of interest to coal are those now being conducted by the Army Corps of Engineers on the Ohio River, the Monongahela River (Pa.) and the Warrior River (Ala.). Also on ACE's long-range agenda, how-

ever, are (1) a proposed but unauthorized improvement program on the Illinois Waterway, and (2) authorized construction of 28 locks and dams on the Arkansas River which, when completed in the early 1970s, will provide a navigable route from Catoosa, Okla. (15 mi east of Tulsa) to the Mississippi River.

Industrial migration to riverside still focuses on the Ohio Valley. Here, nearness to the Ohio River and its tributaries offers concrete opportunities to cut production and marketing costs. Proof of the pudding comes in the eating. During the past 8 yr, American industry has poured into the area an estimated \$16 billion for new or expanded plants. With investment now running at an annual rate of \$1.5 to \$2 billion, no letup in construction activity is foreseen.

Spearheading industrial development in the Ohio Valley are the heavy industries — atomic energy, electric power, chemicals, aluminum, petroleum, steel, etc.—which are actually, or potentially, among the biggest coal consumers. And these consumers share with coal producers a

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ON THE GREEN and Barren rivers coal shipments jumped from 128,000 tons in 1954 to 2.7 million tons in 1957. Four barges (above) is Green's tow-size limit.

Marketing Role

strong mutuality of interest in water ransport. What is their interest? As out by one analyst:

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"It's no secret — low cost. Example: Railroads charge \$4.72 a net on to move coal from Ceredo, W. Va. (near Huntington) to Aliquippa, Pa. (just below Pittsburgh). There is also a dumping charge of 15c to 20c a net ton. The barge rate—\$1.30 a ton, including unloading."

Predictions, however, well calculated, can always be disputed. But they take on stature when supported by the force of four factors which all point to an accelerated shift in producer's dependence on barge transport for moving coal from mine to market.

Factor No. 1: Persistent Growth in Barged Coal

Although tonnage data is not yet available, observers close to the picture say that river transport of coal in 1958, suffering mainly from reduced shipments to steel mills in the first half, fell to its lowest volume in

several years. But most agree that coal tonnage will pick up again in 1959, notably on the Ohio, Illinois and Mississippi river systems.

"Stockpiles in these areas are low," Rivers & Harbors reports (January, 1959), "and new power-producing plants which rely on barged coal for fuel are scheduled to open before next winter." As a result, the magazine suggests that coal, for the first time, may edge out petroleum for top spot in volume of river tonnage. Of total ton-mileage traffic on inland waterways in 1955, oil and gas accounted for 35%, coal 30%, and iron and steel, 22%. Coal's share in 1959 may rise to more than half the total.

Perhaps the best yardsticks for evaluating growth potentials of barged coal come in reviewing long-range trends of the past.

Note, for example, the marked shift in producers' dependence on barge transport as shown in latest available figures compiled for *Coal Age* by the American Waterways Operators, Inc. (p 82). The outstanding fact: River movement of bituminous moved up from 9.3% of total production in 1951 to 13.4% in 1954 and 16% in 1957, or, in the same respective years, from 49.6 to 52.7 to 78.9 million tons.

Contributing most to growth in coal tonnage between 1951 and 1957 (in order of volume) were shipments originating from the Louisville District, Ohio River; the Monongahela River; the Tennessee River; the Huntington District, Ohio River; and the Green and Barren rivers. Together, these originating areas accounted for 24.3 million tons, or 83%, of the total increase of 29.3 million tons.

By areas of destination, most traffic growth occurred (in order of volume) from shipments to the Louisville District, Ohio River; the Tennessee River; the Monongahela River; and the Huntington District, Ohio River. Together, these destination areas accounted for 25.7 million tons, or 88%, of the total increase of 29.3 million tons.

Note also the long-range experience of the Army Corps of Engineers in planning improvements for inland waterways. ACE spokesmen openly admit that freight movement exceeds anticipated increases in nearly all projects. The reasons are clear: Construction time and the availability of funds just can't keep up with the pace of traffic growth. And the pace of this growth was clearly defined in a 1957 report:

"Analysis of the trend of traffic growth [on the Ohio River] during the period 1915-55 indicates that traffic in tons tends to double every 11 yr and that ton-mileage tends to double every 9 yr. At the present time, there is no indication that continuing increases in traffic growth will be arrested in the foreseeable future."

Army Engineers, for example, cite recent experience with the Green River (an Ohio tributary) where traffic is based solely on coal. In 1957 -the first full year of operation after completing modernization of the river's navigation system-outbound traffic reached 2,527,000 tons, or 257,-000 tons more than the assured or average tonnage estimated by the River and Harbor Board in April, 1953. (An unconfirmed report states that 5,000,000 tons of coal moved down this river in 1958 and that tonnage is expected to hit 6,000,000 tons this year.)

Plans for Fewer, Higher-Capacity Locks

Plan for the Ohio River

		Fund Requirements			
Project Location	Locks to be Re- placed— By Nos.	Total Estimated Cost	Actual Through 6-30-59	After 6-30-59	Appropriation Request 6-30-59 to 6-30-60
New Cumberland	7-9	\$41,500,000	\$29,052,000	\$12,448,000	\$ 6,800,000
Greenup	27-30	57,600,000	37,108,000	20,492,000	10,265,000
Markland	35-39	73,600,000	28.407,000	45,193,000	11,627,000
Louisville					
lock &					
dam 41 (new					
lock & partial					
reconst.)		48,700,000	9,439,000	39,261,000	10,300,000
New Richmond	31-34	76,600,000	4,691,000	71,909,000	9,300,000
Pike Island	10, 11	63,500,000	1,068,000	62,432,000	3,500,000
Uniontown	48, 49	52,500,000		52,500,000	***
Oppossum Creek.	12-14	52,200,000		52,200,000	***
Belleville	17-20	64,100,000		64,100,000	
Racine	21-23	51,700,000		51,700,000	
Willow Island	15, 16	76,900,000		76,900,000	
Newburg	46, 47	59,500,000		59,500,000	***
Emsworth (locks)		31,800,000	4 * *	31,800,000	
Gallipolis					
(3rd lock)		26,100,000		26,100,000	
Cannelton	43, 44, 45	65,900,000		65,900,000	
Dog Island	50, 51 43	72,000,000		72,000,000	
Dashields (recon- struct locks &					
raise dam)		42,800,000		42,800,000	* * *
Mound City	52-53	79,500,000		79,500,000	
Montgomery (re- construct locks					
and dam)		68,600,000		68,600,000	***

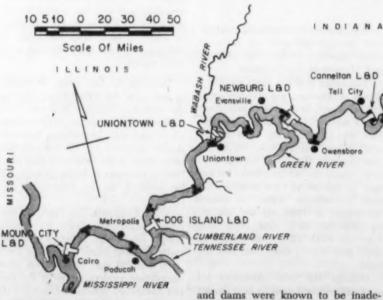
ticular to locations on or near the Ohio River and its tributaries—is a phenomenon already well documented in business literature. But a few highlights on its magnitude, scope and unchecked momentum are pertinent.

In the 6-yr period, 1951-1956, the Ohio Valley Improvement Association estimated area investment in new industrial plants dependent on river transportation at about \$13 billion. With continuing high-level construction activity in 1957 and 1958, investment since 1950 now probably totals about \$16 billion.

Development has focused on heavy industries-atomic energy, electric

Lawrencebur

MARKLAND LBD



power, chemicals, aluminum, petroleum, steel, etc.—which are actually, or potentially, among the biggest consumers of coal.

Louisville

SALT RIVER

LOUISVILLE L&D

Along the Ohio River, for example, completed or announced expansion of electric power plants has involved investment of more than \$3 billion since 1950. Prominent among these are several new units of the AEP system which burns a total of 10.5 million tons of coal annually, according to latest available figures.

In the same area, the aluminum industry is building or completing plants which, a BCR report says, are opening "a potential market for more

As another example, Army Engineers also point to the "original" Ohio River system. This included construction of 50 locks and dams and dredging a minimum 9-ft channel through the river's entire 981-mi length from Pittsburgh, Pa. to Cairo, Ill. Soon after completion in 1929, these locks

and dams were known to be inadequate and the present modernization program was conceived.

Factor No. 2: Migration To Riverside Unchecked

The postwar migration of industry to inland waterway sites—and, in par-

and Dams Anticipate Heavier Coal Traffic



than 22 million tons of coal per year by 1975."

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The continuing force of waterside industrial development is shown in data recently released by the American Waterways Operators, Inc. During the 7-yr period, 1952-58, AWO counts 2,892 new industrial projects along the Nation's navigable waterways (or an average of 413 per year). In 1958, the new project tally was 488, slightly more than the 486 recorded in 1957.

"Last year's total, second only to 1956 [565] is particularly significant," comments AWO president, Braxton B. Carr, "because 1958 was a recession year and industrial construction and plant and equipment expenditures in general dropped sharply from 1957 rates." The ability of waterside plant development to better than hold its own "is due in part to recessionary pressures which have driven more companies to waterways for industrial sites to take advantage of low-cost barge trans-

Project Location	Locks to be Re- placed— By Nos.	Total Estimated Cost	Actual Through 6-30-59	After 6-30-59	Appropriation Request 6-30-59 to 6-30-60
Lock No. 2(a)	2	\$17,872,000	\$17,872,000	\$	\$
Lock No. 4(b)	4	8,590,000	20,000	8,570,000	
Maxwell	5, 6	30,400,000	395,000	29,910,000	95,000
Grays Landing	7	22,800,000	27,000	2,773,000	
Lock No. 8(b)	8	3,500,000	2,775,000		725,000
Morgantown(a)	10, 11	8,778,000	8,778,000		
Hildebrand	12, 13	12,460,000	11,182,000		1,278,000
Opekiska	14, 15	21,900,000	264,000	21,636,000	
Total		\$126,300,000	\$41,313,000	\$82,889,000	\$2,098,000
(a) Completed.	(b) Raise	crest of dam.			

Plan for the Black Warrior, Warrior, and Tombigbee Rivers

		Fund Requirements			
Project Location	Locks to be Re- placed— By Nos.	Total - Estimated Cost	Actual Through 6-30-59	After 6-30-59	Appropriation Request 6-30-59 to 6-30-60
Jackson(b)	1, 2, 3	\$21,000,000	\$8,112,000	\$12,888,000	\$8,150,000
Demopolis(a)	4-7	19,630,000	19,630,000		
Warrior(a)	8, 9	13,416,000	13,416,000		***
Tuscaloosa(a)	10-12	4,451,000	4,451,000	0 0 6	***
Holt	13-16	33,000,000		33,000,000	***
$Bankhead(c), \ldots$	17	14,000,000	. 4 .	14,000,000	
Total		\$105,497,000	\$45,609,000	\$59,888,000	\$8,150,000

(a) Completed. (b) Under construction. (c) Not authorized. Data for map and tables supplied by Army Corps of Engineers, updated to February, 1959.

Traffic Roundup

Movements of Bituminous Coal on the Inland Waterway System⁽¹⁾

(Net Tons)

By Areas of Origin	1957	1954	1951
Monongahela River	29,608,181	21,109,338	24,070,946
Allegheny River	3,034,308	1,965,077	1,512,795
Pittsburgh District	2,566,381	1,575,286	2,857,705
Huntington District	12,930,132	9,858,556	8,172,655
Louisville District		2,539,131	462,620
Total Ohio River	22,393,349	13,972,973	11,492,980
Kanawha River	6,657,258	4,369,530	5,133,783
Mississippi River		1,570,372	1,285,116
Illinois River		5,202,431	5,530,708
Tennessee River		4,023,107	278,836
Green and Barren Rivers		129,737	
Warrior River System		328,785	301,474 (2)
Kentucky River		32,550	****
Black River		3,500	****
Grand Total	78,874,289	52,707,400	49,606,638
By Areas of Destination	1957	1954	1951
Monongahela River	18,983,023	13,949,192	13,552,182
Allegheny RiverOhio River:		696,740	287,898
Pittsburgh District	16,116,178	11,345,697	16,845,475
Huntington District	8,415,619	2,517,578	3,145,782
Louisville District	14,825,372	8,948,151	5,885,313
Total Ohio River	39,357,169	22,811,426	25,876,570
Kanawha River	2,195,700	2,240,021	2,121,251
Mississippi River		2,303,744	1,379,263
Illinois River		1,444,306	1,244,192
Port of Chicago and Lake Michigan		4,102,787	4,259,131
Tennessee River		4,125,231	476,786
Kentucky River		30,861	2,203
Black River		167,764	93,790
St. Croix River		5,304	8,030
Minnesota River		362,955	3,868
	652,280	337,332	255,974
Sabine-Neches Waterway	1,435		
Sabine-Neches Waterway	1,435	****	****
Sabine-Neches Waterway Galveston Bay Missouri River	1,435 144,539 792		****
Sabine-Neches Waterway Galveston Bay Missouri River	1,435 144,539 792	129,737	***
Sabine-Neches Waterway Galveston Bay Missouri River	1,435 144,539 792 139,092		****
Warrior River System. Sabine-Neches Waterway. Galveston Bay. Missouri River. Green and Barren Rivers. Grand Total. Fotal Bituminous Coal production	1,435 144,539 792 139,092	129,737	****

 The inland waterway movements include coal loaded at river mines and coal shipped to river ports by rail and truck for trans-shipment.

(2) Includes 45,500 tons originated for delivery at Houston, Tex. not shown under "areas of destination."

Source: Corps of Engineers, U. S. Army.

Prepared by: The American Waterways Operators, Inc., Washington, D. C.

portation in their production programming schedules."

In 1959 and 1960, AWO says "a new spurt in industrial-plant development can be expected with still more plants constructed along waterways." Expectations are based on Federal and private estimates of construction activity, a trend to lower industrial construction costs in many areas, and the high volume of inquiries which state development agencies are re-

ceiving from industries seeking new plant sites.

Factor No. 3: Modernizing Of Navigation Systems

In 1957, the Ohio Valley Improvement Association keynoted the critical importance of modernizing the Ohio and its tributaries as follows:

"Only if the construction of new

locks and dams in the reaches of most critical congestion has been accelerated and brought to completion will industrial expansion be able to continue at the present rate of \$1 billion per year, and the present growth and prosperity of the Ohio Basin continue at its full potentials based on an adequate navigation system."

As noted previously, the Army Corps of Engineers is not unaware of the compelling nature of its job. Already to ACE's credit are completion of recent modernization programs on Ohio tributaries such as those effected, for example, on the Green River, and, in collaboration with TVA. on the Tennessee River.

Within the limits of construction time and available funds, the Corps is now pushing modernization of the Ohio River proper; another of its main tributaries, the Monongahela; and the Warrior River system in Alabama. Cost data and other details of current plans for replacing obsolete locks and dams on these key coalcarrying routes are given, updated to February, 1959, on p 81. The map spread on the same pages gives the location and construction status of projects on the Ohio River.

In terms of total expenditures planned, the accompanying tables show that improvements on the Ohio River, through fiscal year 1958-59, are 10% completed; on the Monongahela, 33%; and on the Warrior, 43%.

Cost data on the Ohio River is, of course, misleading in terms of critical projects. Planned spending is 31% completed on four urgently needed projects covering the heavily traveled 327-mi stretch between Louisville, Ky., and Gallipolis, Ohio. Also—within the 100-mi segment downstream from Pittsburgh—note that spending on the New Cumberland project is about 60% completed, and that substantial outlays have been made on Pike Island modernization.

If plans pan out as scheduled, streamlining of critical reaches of the Ohio should be finished around 1965. Chances are the total present plan will be completed in the mid-1970s. By that time the number of locks and dams will have been reduced from 46 to 21. But whether speaking of the job in terms of "critical reaches" or the "total plan" the objective is the same—more efficient handling of anticipated increases in freight traffic. (OVIA sees 1966 volume rising to 32 billion-ton miles or double the

tonnage movement total for 1956.)

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Besides allowing a much higher freight-tonnage load, ACE spokesmen say that other benefits will follow from a reduced number of locks and dams. For one, the Corps figures it will cost considerably less to operate and maintain a smaller number of installations. For another, a barge operator will be able to cut time 10½ to 35 hr and save as much as \$2,000 if he wishes to make a through trip from Pittsburgh to Cairo.

Factor No. 4: Haulage And Handling Streamlined

Fourth factor behind past and expected-future growth in river transport of coal is the availability of equipment tailored to meet the varying demands of improved navigation systems and the need for more efficient haulage and handling. In a statement specially prepared for Coal Age, a spokesman for the Dravo Corp.—one of the major suppliers of inland waterways equipment to the coal trade—highlights trends in the use and construction of tow, barge and dock facilities as follows:

The nature of the rivers on which coal is moved greatly affects the size of the tows. On the Monongahela River, for example, the size of the locks at the dams limits a tow to about six barges. Thus, the tugboats operating in this area need not be extremely powerful. Barges used are of the 175-ft variety, with a capacity of about 900 tons. Farther down on the Ohio, as many as 20 such barges will be pushed in a single tow, giving a total load of about 18,000 tons. On the lower Ohio and on the Mississippi, 195-ft barges are more common. These have a capacity of about 1,400 to 1,500 tons each. Also on the Mississippi, where there are no locks to be navigated, a tow may include 30 or more barges with a total load of 42,000 to 45,000 tons. This calls for towboats with substantially more horsepower than those used on the lesser rivers like the Monongahela, the Kanawha or the Green.

"The determining factor, of course, is the size of the locks. Year-round movement of coal on the rivers became assured in 1929 when the Corps of Engineers completed ca-

nalization of the Ohio River to a minimum 9-ft depth. The system of locks and dams built during the preceding 30-odd years eliminated the problem of tows standing loaded but idle in periods of low water. But the largest of these locks was about 600 ft long and only two or three barges wide. This meant that any tow larger than eight or nine barges had to be passed through the locks in sections.

'In recent years the Corps of Engineers has been 'streamlining' its locks and dams, replacing existing facilities with new and larger highlift structures. At such points at Markland, Ky.; New Cumberland, W. Va.; and Greenup, Ky., the Corps is building or has just built facilities that will eliminate many of the old locks and dams. In all, the present 46 will be replaced with only 21 of the new 'super' installations. This will mean not only fewer lockings but bigger tows. At Markland Locks, for example (just completed by Dravo), the main lock is 1,200 ft long and 110 ft wide. This means it will hold as many as fifteen 195-ft barges or twenty 175-ft barges in a single locking. If an operator wished to go to a double locking, a common practice now with much smaller tows, twice as many barges could be included in this load.

"Since 1946 coal barges have represented a large share of all barges built. From 1946-57 there were 3,007 barges of all types-chemical, grain, steel products, oil, ore, etc.constructed for the Mississippi River System and the Gulf Intracoastal Waterway. Of these, 943 bargesapproximately 30%-were built to transport coal. This count only includes companies which haul coal exclusively and does not take into account the many common carrier barge lines which also move large amounts of coal. It is noteworthy that 39% of the 943 coal barges (172 barges) were built in the last 4 yr of that 12-yr period.

"Among the firms which bought considerable numbers of coal barges in those 12 yr were: Jones & Laughlin Steel Corp.—142; Consolidation Coal Co.—114: Island Creek Fuel & Transportation Co.—102; O. F. Shearer & Sons (barge line)—90; U.S. Steel Corp.—90; Weirton Steel Corp.—62; Crounse Corp. (barge line)—60; Wheeling Steel Corp.—47;

Semet-Solvay Div., Allied Chemical Corp.-46; Amherst Barge Co.-20.

"Towboat construction for purely coal transportation (again ignoring the barge lines that haul coal along with other cargoes) has shown a trend toward fewer but more powerful boats. Between 1946 and 1952 there were 31 towboats built for this trade. Only one was of more than 1,600 hp. From 1953 through 1957 there were 24 such boats built, seven of which generate more than 2,400 hp and one as much as 5,600 hp.

"In the period covered, U.S. Steel, Jones & Laughlin, Crounse and Island Creek Fuel & Transportation each put six new towboats into service and Consolidation Coal bought

"Less exact figures are available on coal docks but Dravo's experience may be some guide, since Dravo probably builds more of these facilities than any other contractor. Between 1946 and 1957, Dravo completed 42 docks used for loading or unloading either coal alone or coal and steel products. Each of these docks was equipped with special loading or unloading equipment, sometimes supplied by Dravo, sometimes by other manufacturers. Only last year, Dravo completed the world's largest coal barge unloader for the Thos. H. Allen electrical generating station in Memphis. Tenn.

Barged Coal: An Immediate Answer to Low-Cost Transport

Since the end of World War II, coal has been plagued by a seemingly nonending round of hikes in rail rates. These have boosted the price of delivered coal to frequently uncompetitive levels. As a result the industry has been compelled to search for new and alternate methods for moving its product from mine to market.

The search has brought increasing emphasis on the use of barges, long-distance conveyors and pipelines. Of the three, barge transport offers the widest application and the greatest immediate potentials for reducing coal's transport bill. The underlying reason: A fortunate geographical coincidence has put rich coal deposits in close proximity to river areas much in demand for industrial development.



STRIPPING AND AUGERING two seams of coal at the Erie No. 2 mine are shown above. Overburden is being readied for blasting to remove the second cut from the lower seam. Note key cut by dragline at left.



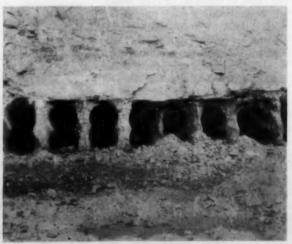
NEW VERTICAL DRILL prepares overburden for blasting at three company operations within a radius of 35 mi.



PACKAGED "STICK" AMMONIUM NITRATE is used to charge horizontal blastholes. The sticks have sealed-in primers.



AUGER OPERATES one shift daily and at the end of each shift is pulled away from the highwall as a safety precaution.



TWO 36-IN HOLES, one on top of the other, are augered in the Pittsburgh seam. Depth varies from 50 to 180 ft.



MODERN PREPARATION FACILITIES improve the quality of strip and auger coals. The 175-tph plant is equipped to wash, dry and size coal from two operations.

Enhancement of a market position for strip and auger coal, developed over the years by B. H. Swaney, Inc., is the result of selling quality, price and service.

High Quality Strip and Auger Coal Meets Today's Market Requirements

DEPENDABILITY, QUALITY AND centered in three counties in West PRICE are keystones in the devel opment of customer confidence and the establishment of a sustained market for strip and auger coals produced by B. H. Swaney, Inc., Clarksburg, W. Va. Dependability is established by insuring customers of a year-around supply through wellplanned mining methods with builtin flexibility for stripping and augering during winter months. Quality "Erie" coals, featuring uniformity, low ash and high Btu count, go handin-hand with modern preparation facilities. Coal prices are economical and remain stable as a result of the company's efforts to continually improve mining and preparation method by utilizing modern mining equipment.

B. H. Swaney began operating as a mining company in 1940 near Uniontown, Pa., with two shovels and two dozers. Haulage was contracted. Average monthly production was 5,000 tons. This is in sharp contrast to the company's present monthly capacity of 50,000 tons or onehalf million annually.

With main offices in Clarksburg. the company's holdings are now Virginia: Erie No. 2, Harrison County; Erie No. 4, Gilmer County; and Erie No. 5, Lewis County. Each operation is equipped to strip and auger but at present Erie No. 5 is limited to augering.

The owners, B. H. Swaney Sr., president, E. B. Swaney, vice president-secretary and treasurer and B. H. Swaney Jr., vice president operations, credit their company's success and growth to continually upgrading the quality of strip and auger coals and, as a result, making their products represent quality plus economical prices and dependability. Fulfillment of this requirement has enabled the company to expand by purchasing larger, more modern equipment, and to acquire additional minable properties, including substantial reserves.

Stripping and Augering

Erie No. 2 mine has two pits to provide a steady flow of coal to the No. 2 tipple. Erie Nos. 4 and 5 have one pit each and coal from both mines is processed at the company's No. 5 plant. Coal from No. 5 is hauled to the plant in trucks while No. 4, which is 20 mi away, transfers the coal in railroad cars.

Erie No. 2-Methods of removing overburden and loading coal in both pits at Erie No. 2 are identical. Main units employed by the company in recovering the 60-in Pittsburgh seam are a 5-yd Bucyrus-Erie 88B drag, 21/2-yd Lima 1201 shovel and a 21/2yd Northwest 80D shovel. Other units include a 11/2-yd Northwest Model 6 shovel, 14-yd Lima Model 604 shovel, D9 and D8 Caterpillar tractors, HD 21 Allis Chalmers tractor, M8 Davey vertical drill and a McCarthy 104 horizontal drill. Hough HL payloaders are used to clean coal before loading. Adams graders also are used for this purpose in addition to maintaining haulage roads.

Removing the first overburden from the upper seam involves the use of bulldozers to push all loose material over the mountainside. Normally, a dozer can remove all material over the upper seam without blasting. However, a strip shovel or drag is often used in conjunction with the dozer to speed up the operation. Occasionally, a small charge



PREPARING THE THIRD BENCH of overburden for blasting at Erie No. 4 is shown above. Note application of key-cut principle directly in front of drag. This is standard practice at all three company operations.

Effective Over-Burden Preparation

is necessary to break small pockets of stubborn sandstone.

After the upper seam coal is uncovered and loaded, preparations are made to remove overburden from the lower seam. The Davey M8 vertical drill is moved in to drill a series of 5 5/8-in blastholes on 15ft centers to a depth of approximately 27 ft. As the vertical drill prepares the overburden for blasting, the 88B drag removes overburden from the open side of the cut. This also involves handling spoil deposited from the upper seam. The key-cut principle is standard practice in preparing the overburden for blasting. It not only reduces blasting cost but also increases the effectiveness of the blast which in turn speeds up the rate of removing overburden with less wear and tear on equipment.

Each hole is charged with a primer and ammonium nitrate. Approximately 160 lb of explosive, plus a 6-lb du Pont primer made especially for ammonium nitrate, is used in each hole. Holes are cleaned by applying compressed air before they are charged. This is accomplished by adding a section of pipe to the air hose and lowering it into the holes, thus removing water and loose ma-



EFFECTIVENESS OF BLAST is shown by the amount of material forced into the key which was cut by the dragline. Ammonium nitrate is used for blasting.



BULLDOZER LEVELS SPOIL so that drag can tram to the open end and start removing overburden. The drag removed the spoil of this particular shot in 24 hr.



BLASTHOLES are set off in sequence. First row is instantaneous and remaining rows follow at 25-MS intervals. Holes are drilled on 15-ft centers.



MATERIAL FORCED AWAY from the highwall leaves a deep trench which also indicates good blasting practices. Note trench along the highwall.

terial. This practice has proved most effective in keeping primer cost down and also producing a better shot.

Instantaneous caps are used in the first row next to the open end and 25-MS delay caps in the remaining rows.

The key-cut principle, drilling pattern, cleaning holes before charging and use of special primers and delay caps result in an overall reduction in blasting cost with equal or better fragmentation and less vibration and noise.

After one cut has been mined from the upper and lower seams, another cut is taken from each seam. The same methods are used to uncover the second cut. Width of cuts average 40 to 45 ft. Highwalls range from 60 to 100 ft.

Occasionally, it is necessary to drill horizontal holes. Holes, 5 5/8 in in diameter, are drilled to a depth equal to the width of the cut and 15 ft apart. Specially packaged "sticks" of ammonium nitrate with built-in primers are used in the horizontal holes. The AL17 Austin stick ammonium nitrate is purchased in 25-lb cylindrical containers 5 in in diameter.

The augering phase of the operation takes place after coal from the second cut of the upper seam has been taken and before overburden is removed from the lower seam. Augering the lower seam completes the mining cycle.

Haulage from both pits is contracted. Coal is hauled approximately 5 mi to the No. 2 tipple. The tipple will be discussed in the preparation section of this article.

Erie Nos. 4 and 5—Stripping and augering conditions in Lewis and Gilmer counties differ from those in Harrison County. Therefore, company mining practices were altered to mine coal economically in this section of West Virginia where the overburden consists of shale, sandstone and bluerock. Numerous faults and slips are present in these areas which makes it difficult to leave a good highwall for the auger. The mountains are extremely steep and numerous fresh water springs add to the difficulties.

Equipment employed by the company at these two operations includes a 5-yd Erie 88B drag and a 2½-yd Northwest 80D shovel for removing overburden. A D9 caterpillar and a HD21 Allis Chalmers tractor work with the large stripping units. Other units include a 1¾-yd Lima Model 750 shovel for loading coal and two Compton Model 36 augers with 33-and 36-in diameter heads. Two HD20 Allis Chalmers tractors work with the augers. The vertical drill used at Erie No. 2 also drills overburden at Erie Nos. 4 and 5.

Horizontal holes are drilled with a McCarthy 104. Four off-highway Euclid trucks are used at both mines to haul spoil from the pits.

Removing overburden from the Pittsburgh seam is accomplished by the bench method. Since the overburden near the surface is tender and can be handled without blasting, bulldozers and a shovel are used to remove material from the first two benches. The dozers remove all material that can be handled with ease. As soon at the material becomes difficult to handle, the 21/2-yd shovel moves in and strips as much as possible. Normally, the shovel is able to make the third bench about 50 ft wide, measuring from the highwall to the outside limit of the cut. Width of cuts usually is kept within a maximum of 50 ft.

To remove the third bench it is necessary to drill and blast. Standards for preparing the overburden are similar to those used at Erie No. 2. The drag opens up the outside of



AIR TABLE, with 35 tph capacity, was installed in 1956 at the No. 5 plant to improve the \(\frac{1}{2} \) product.



UNIQUE BLENDING CONVEYOR was designed by the company to prepare or blend any grade that customers may require.



DIESEL-ELECTRIC SET, rated at 125 kw, provides 440 V, power to plant.



HANDY MOBILE TRACK AND GROUND UNIT facilitates shifting loaded and empty railroad cars at the No. 5 plant. The unit can handle 3 to 4 loaded cars.

Preparation Facilities Improve Plant Efficiency

the cut by removing a section of spoil three buckets wide along the area to be blasted, thus taking advantage of the key-cut principle. The drag starts cutting the key about 15 ft in to automatically make it unnecessary to handle outcrop coal. The highwalls average 60 to 100 ft,

The vertical drill sinks 5% or 6% in blastholes depending on the type of overburden being drilled. If the overburden consists of extremely hard rock large-diameter holes are drilled. When shale is encountered smaller holes are sunk. Holes are drilled on 15-ft centers. Depth varies with the terrain. The amount of

ammonium nitrate and primer placed in each hole is determined by the depth and type of overburden. Normally the holes next to the highwall are charged with 150-lb of ammonium nitrate and the outside holes with 75 lb. Holes are cleaned before charging. The methods of preparing the third bench for blasting, the blast and effectiveness of the blast are shown in the accompanying illustrations.

After the overburden is blasted the bulldozer levels the overburden to permit the drag to tram to the open end of the cut to start removing spoil material. The average time required to remove the spoil is 24 hr, operating the drag three continuous shifts. The top coal is then cleaned and loaded into trucks by a 1¾-yd shovel. Coal is hauled 8 mi to Gilmer railroad station where it is crushed to 7 in and then loaded into railroad cars for transfer to the No. 5 preparation plant. Truck haulage is contracted.

The auger operation follows close behind the stripping units because the highwall will not stand up for long periods of time as a result of numerous faults and slips. Augering is done on the day shift only and at the end of each shift the auger is



CAR SHAKEOUT AND BELT CONVEYOR were added to handle coal from Eric No. 4, which is 20 mi away. Coal from belt discharges into a 70-ton bin.

Management and Supervisory Personnel, B. H. Swaney, Inc.

B. H. Swaney, President.

B. H. Swaney Jr., Vice President Operations.

E. B. Swaney, Vice President and Secretary and Treasurer.

Wade Gainer, Sales Manager.

Charles Marshall, General Superintendent (Erie Nos. 4 and 5).

Clarence Weekley, Foreman (Erie No. 2). Woodrow Perrine, Preparation Foreman (No. 5 plant).

Scott Tanner, Preparation Foreman (No. 2 plant).

pulled away from the highwall so that it will not be damaged by falling rock.

The auger bores two holes in the Pittsburgh seam, one on top of the other. Depth of holes varies from 50 to 180 ft, depending on the location and condition of the seam.

Preparation

The modern preparation plant in Lewis County was constructed in 1955 and was designed to process 175 tph through a 2-cell Hydro-separator. A Roberts & Schaefer Super Airflow cleaner was installed in 1956 to improve the 16x0 product. Later that year a Hewitt-Robins car shakeout was added to handle coal from the Erie No. 4 mine. Raw coal, averaging 14% ash, is fed to the plant and reduced to 6½ to 7% ash. Daily coal analysis includes checking ash, sulfur, coke button and moisture content.

Coal processed at the No. 5 preparation plant is supplied by the two mines previously described (Erie No. 4 and 5). Coal from both operations is discharged into a 70-ton storage bin. No. 5 coal is unloaded directly from trucks and No. 4 from railroad cars via belt conveyor.

Coal from the bin is discharged onto a Syntron vibrator equipped with a 5-in screen. Plus 5-in coal is crushed to minus 5 in. The crushed product and the minus 5-in coal from the vibrator are collected on a drag conveyor which feeds to a 5x14 Ty-Rock double-deck vibrator. The top deck

contains two screens. The first is \(\frac{5}{16} \) in and the second 1\(\frac{1}{4} \) in. Directly under the 1\(\frac{1}{4} \)-in screen is a \(\frac{5}{16} \)-in screen. The top product (5\(\frac{5}{2} \)\(\frac{5}{16} \)) is sluiced to a 2-cell 150-tph Roberts & Schaefer Hydro-separator.

The %x0 product from the vibrator goes by chute to a thermal dryer with Bigelow Liptak furnace for drying and then is conveyed to a 35-tph Roberts & Schaefer Super Airflow table for cleaning. Cleaned %x0 is collected on the blending conveyor for loading separately or blending. Refuse from the air table and dust from a Roberts & Schaefer cyclone are collected on a refuse conveyor for disposal by truck.

The %6-in screens on the raw-coal vibrator are designed with 3-in slots. To eliminate blinding the 5-in coal is used for scrubbing. Previously, the 5-in coal was bypassed. When the coal is wet the 3-in slots are placed parallel to the flow of coal. When coal is dry, slots are placed at right angles to the flow. These changes are made in both top and bottom screens in a matter of a few minutes, using a special bolting arrangement.

Refuse from the washer goes to the refuse storage bin via a drag conveyor. Clean coal is discharged onto an Allis Chalmers Low Head double-deck dewatering screen equipped with 4- and 46-in screens. The 5x4-in product goes to a secondary crusher for reduction to 4-, 1-, 14- or 2-in. Provisions make it possible to bypass the crusher and discharge onto the clean-coal conveyor. The 4x46 discharges directly

onto the clean-coal conveyor. Effluent is pumped to a nearby pond where solids settle out and clarified water is pumped back to the plant for reuse.

The company prevents slate fires by adding layers of soil to refuse banks. The 5x1/16 product from the cleancoal conveyor discharges onto a 5x12 Ty-Roc triple-deck vibrator. Top deck is equipped with 11/4- and 2-in screens. Only half of the second deck is used and contains a 14-in screen directly under the 2-in screen. The bottom screen is % in. Sizes produced on the vibrator are collected on a blending conveyor for loading directly into railroad cars or blending. Standard "Erie" coals made at the No. 5 plant are as follows: %ex0, %x0, 1x0, %x%e, 1\/4x\%, 2x1, 2x14, 5x14 and 5x2 or combinations of the preceding,

The No. 5 plant receives power at 440 V from two Caterpillar diesel-electric sets. A Model D397 unit, rated at 125 kw, provides power for the main plant. A Model D13,000, rated at 75 kw, supplies power for the car shakeout and belt conveyor.

The No. 2 tipple in Harrison County is equipped to crush and size coal from the 2-pit operation. Coal is discharged into a 60-ton storage bin, and fed onto a shaker screen to separate the minus 1¼-in product. Top size passes over a picking table and then is crushed to 5 in. Both products are then combined and conveyed to an Allis-Chalmers triple-deck sizing screen. Sizes normally made are ¾x0 slack, 1¼x0 and 2x0 nut-slack, 1¼x¾ pea, and 5x1¼ and 5x2 egg.

Controlling cable cost can best be achieved by considering the electrical and physical limitations and lengthening cable life by replacing all temporary splices with permanent, vulcanized splices.

A step-by-step description shows how to splice and repair cables.



CABLE REPAIR SHOP is 320 ft long and features two assembly lines consisting of 27 vulcanizers and 300 different molds to repair cables of various sizes.

How to Control Cable Cost



ELECTRIC SPOOLERS with foot control facilitates cable handling.

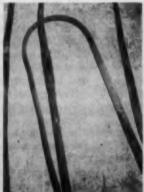
REDUCING CABLE COST can help bring you one step closer to a lower cost per ton of coal than you might otherwise achieve. Mechanized mining today employs a variety of cables requiring numerous types and sizes, which add considerably to the supply cost. This one item alone can put you over your supply budget in short order if steps are not taken to control it.

There are two ways by which cable cost can be reduced:

1. Consider the electrical and physical limitations in applying the cables to various equipment. These limitations include, among other



FAULT-FINDER produces 20,000 V DC for testing repaired TEMPORARY SPLICES (right) were cut out of cables and cables, Each cable is tested before it leaves the shop.



replaced with permanent, vulcanized splices (left).





L-SHAPED SHOP facilitates handling cables from trucks and provides ample space to stretch cables out for inspections. Equipment also is positioned to increase efficiency and provide for assembly-line processing of cables.

things, current overload, excessive tension, mechanical damage and improper splicing.

2. Lengthen cable life by replacing all temporary splices with permanent, vulcanized splices and repairing all damaged sections before the cable becomes useless.

Cable Limitations

The application and treatment of electrical cables should be constantly checked. Current overload, for example, is usually the result of too small a conductor, supply voltage too low, inadequate overload protection or too many temporary splices or a combination of the preceding.

Reel-type equipment featuring automatic spooling devices quite often produce excessive tension on cables. Improper adjustment of the controls is the major cause. Also, cables are pulled apart because they are too short.

Mechanical damage to cables includes crushing, cuts, snags, abrasions, and punctures. The most common causes of mechanical damage are running over cables and catching them between objects. Also, worn spooling devices, such as sheaves, guides and thread bars, help shorten cable life.

One of the major causes of cable delays is temporary splicing. The general rule is to make splices as quickly as possible. This usually results in a poorly-made splice which lasts only for a short time. Setting up a standard method for splicing cables will reduce delays and add to their

If these precautions are observed, cable cost and cable downtime should decrease considerably. But one allimportant fact remains; cables will be damaged. Usually, each injury produces a temporary splice. The maximum number of splices that a cable should contain before it is taken out of service varies. As a rule six to eight is the limit. However, this depends on the type of equipment and cable size. For example, a temporary splice in a No. 6 twin-parallel cable causes an average drop of 6 V. If a cable contained six splices, a total drop of 36 V would be contributed by splices alone. Discounting the normal voltage drop in the cable, if the delivered voltage to the nipping station was 250 V then motor terminal voltage would be 214 V. This low operating voltage in turn decreases the operating efficiency of the machine and increases maintenance.

In another instance, a check on a No. 4, 450-ft 2-conductor shuttle-car cable revealed that it contained 22 temporary splices. The cable had to be respliced on the average of six times per shift. If it took 10 min to



SHOP PERSONNEL — Joe Fadlevich, president (left); Martin Fadlevich, superintendent; George Fadlevich, foreman; Bob Fadlevich, foreman; T. K. Kellen, night foreman; Jack Selton, truck foreman; Johnny Fadlevich, foreman; and Paul Tarkany, assistant foreman (center).

Nearly New Cables in Eight Steps

How cables are spliced and repaired by this shop is shown in the accompanying step-by-step description.

Stretch the cable out and inspect it for needed splices and damaged sections. Cut out the temporary splices and tape the ends together. Mark each damaged section clearly so that it will not be overlooked. Each section of cable between splices should be given a voltage test to make sure no grounds or openings are present under the outside jacket. The voltage applied should be in the range of 2,500 V.



Remove the outside jacket from both ends of the cable. When removing this jacket make sure that the insulation around each conductor is not damaged or cut. After the jacket has been removed, take the insulation from around each conductor. The type of splice to be made will determine whether conductors will be staggered or opposite each other. In either case the insulation should be pencilled or tapered.



Take both ends of the cable and place them in a cable vise. Either of two methods can be used to connect the conductors together: (1) fusing them together with a torch and a special fusion metal, (2) using copper sleeves and compressing them. As in all electrical repairs the conductors must be thoroughly cleaned before connections are made.

repair each splice, a total of 60 min production time was lost. With two shuttle cars on the section the downtime would be approximately 30 min. Coal companies cannot afford delays of this type.

Two reasons for placing a limit on the number of splices are:

1. The voltage drop is proportional to the number of splices in a cable, thus lowering voltage at motor terminals accordingly. The more splices contained in a cable the greater the current demand, since the current increases as the voltage decreases.

The safety factor is of primary importance. Temporary insulation does not provide full protection to personnel and equipment.

Cable Reconditioning

Unless a cable is completely destroyed, i.e., the insulation melted due to excessive overload or deteriorated because of age, it can be reconditioned at one-fifth to onetenth the original cost. The actual figures depend on the size of the cable, the number of splices, and the repairs necessary to restore it to nearly new condition. The high cost of labor, materials and a shortage of good repairmen will not permit maintenance departments to provide this service economically. Under a mineshop setup, one man will be able to make four vulcanized splices per shift, at the most. At a wage rate of approximately \$25.00 per day, each splice would cost \$6.25, plus material and power consumption.

Even if it takes two cables to make one, the saving is worthwhile. Because a cable has several splices does not mean that it is ready for the scrap pile. The cable between the splices usually is in good condition. The improvements made in vulcanized splicing and the various methods employed to connect the conductors make the permanent splice nearly equal to the original cable, both in mechanical strength and insulating properties. Therefore, the reconditioned cable should stand up under normal operating conditions as well as the new cable.

The one condition, however, is that each splice and repair must be of the highest quality.

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Cable Repair Shops

The Cable Vulcanizing Shop, Pecks Mill, W. Va., provides cable repair service to mines in outlying districts. This particular shop is equipped to provide pickup and delivery service, quick repair service and a guarantee of workmanship. It employs 26 men and maintains seven trucks for delivery service.

The main shop is 320 ft long and features two assembly lines consisting of 27 vulcanizing machines and 300 different molds to repair cables of various sizes and makes, including plastic cables. Twelve types of splices are used for various applications. Other shop equipment consists of two electric cable spoolers, 2-ton electric hoist, a hydraulic portable lift, four small electric-cable test units capable of producing 2,500 V DC and one large unit with an output of 20,000 V DC.

Why pivot-steer hauler





cuts equipment downtime...
boosts pit output...
lowers handling costs...

Rugged, simplified construction is ne big reason why speedy LeTournau-Westinghouse Tournapull® Rearoumps keep working efficiently dayfter day... year after year... to help it owners cut costs. Notice that on his machine there are no springs, no ie rods, no hose and pipe lines, no rame, no long drive-shaft to require naintenance and repair.

In place of a foundation frame and hody sub-frame, Tournapull primemover and trail-unit are hitched together by means of a high horizontal yoke. Yoke pivots horizontally on kingpin at front... then extends back along side of bowl, where it pivots vertically just above and ahead of rearwheels. This unique vertical and horizontal kingpin arrangement also provides an easy oscillating action that eliminates most twisting, tilting strains

... permits higher working speeds on uneven ground to boost pit output.

Resists heaviest loading jolts

Shovel operator does not have to take it slow and easy when loading heavy materials. L-W Rear-Dump bowl is all steel—no wood fillers. Triple-layer floor is lined with heat-treated tool-steel strips, welded to solid billets laid over heavy steel plate. Sloping sides deflect load shock, quickly cushion floor area with layer of material to minimise rock damage.

Tire, clutch, transmission wear reduced

Costly wear on tires, clutch, and transmission caused by spinning wheels in slippery or loose footing, is minimized with Tournapull Rear-Dump. When either powered wheel begins to spin, unit's exclusive L-W power-transfer differential automatically diverts up to 80% of power to drive wheel on firmest footing. Also, electric 90° pivotturn through geared kingpin, lets operator "walk" prime-mover out of mud or loose sand. Dumping action can also be used to "hump" empty hauler off a soft bank.

Features like these—plus full 90° turns, efficient electric-controls, fast, clean dump, giant air brakes, excellent visibility—add up to high production and low costs. Let us show you a LeTourneau-Westinghouse Tournapull Rear-Dump in action. Available in 3 sizes: 11, 22, and 35 tons.

8-1892-HQ-1

Bonus interchangeability feature

For less than ¼ the cost of an L-W Tournapull prime-mover with Rear-Dump, you can get an easy-loading L-W scraper to interchange with original Rear-Dump trail-unit. Changeover — using same 2-wheel prime-mover — takes just a few hours. Use scraper to lower dirtmoving costs on stripping oper-



a tew nours. Use scraper to lower distmoving costs on stripping operations, houl-road or drainage construction, and for exploratory mining. Other trail-units to increase primemover's usefulness also available.

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit





Make doubly sure the surfaces are clean and the insulation of each conductor is pencilled. Apply a rubberbase cement to the bare conductors and along the original insulation to insure proper bonding of the rubber tape to be applied. Wrap each conductor with a standard type of rubber insulating tape. Apply the tape, half-lapped, over each splice. Continue this procedure until each conductor has the required amount of insulation.



Make sure that the jacket on each end is thoroughly cleaned for the next step. The raw rubber which will serve as the outside jacket will not adhere to a dirty surface.



Again, place the splice in a cable vise, making sure that it is clean. Apply a rubber-base cement and wrap the splice with raw rubber tape. It should extend a few inches to each side of the splice and over the original jacket. Another type of raw rubber in strip form can be used on certain cables. These strips are placed along the length of the splice instead of wrapping them around the splice.

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Place the cable in a vulcanizer using the right molds for the size and type of cable being repaired. Use a lubricant on the molds so that the raw rubber will not stick. Tighten the molds until they are firmly set in place. Allow the splice to vulcanize for 45 to 60 min, depending on the type of rubber used. When the finished splice is removed, trim the edges and buff them to a smooth finish.



8 Inspect the cable visually and test it electrically. Apply 9,000 V by connecting it to a test unit. Faults that could not otherwise be detected will show up when high voltage is applied. In visual inspection one man should examine every inch of the cable. Repair faults located during the inspection immediately. This final check is additional assurance that the cable is in first-class condition when it goes back into service.



"lower the boom" on your stripping costs

When stripping overburden, building haul roads, or leveling sites for camps or drill set-ups — fast, high-production earthmovers can play an important part in keeping your costs down. That's why so many it owners rely on LeTourneau-Westinghouse Tournapull® scrapers. hese versatile machines heap big loads quickly, haul anywhere, and spread fast. Here are 4 big reasons why:

1. Most power used for cutting

When loading, Fullpak® scraper wheels ride inside cutting width ... hold flat-bottom bowl low (1° flow angle on 28-yd B Fullpak). Dirt slides in easily, almost horizontally. With balk of power used for cutting - little for bulldozing against high-angled blade - scraper heaps big loads fast. With blade location and bowl shape designed for easy, fast-flow loading, Fullpaks pack in the last yard almost as easily as the first.

2. Easy loading in tough conditions

High apron-lift permits fast loading and unloading of chunky materials. Quick-release clutch on hoist-motor lets your operator rapidly "pump" bowl up and down...helps get big loads in loose dead-flowing material. Streamlined bowl construction makes it easy to load next to vertical banks and around obstructions.

3. Poor footing no barrier

When working Tournapull scrapers, there's little need for weather shutdown, nor to extend your haul distance to bypass mud, sand, and soft going.

Prime-mover has an exclusive powertransfer differential that automatically slows spinning wheel and transfers up to 4 times the power to wheel on firmest footing. The L-W differential works continuously - on turns, through mud and slippery footing, over rough, uneven ground. This gives you better traction throughout any haul cycle ... for faster, easier, low-cost stripping, roadbuilding, or other dirtmoving.

4. Unloads all material fast

Scraper's positive-ejection tailgate moves straight forward with full powBuilding new haul road at Kentucky pit, modern B Tournapulls with 28-vd Fullpak scrapers heap big loads of sticky clay fast. Machines' excellent maneuverability in the cut and on the fill, plus high travel speed permitted faster cycles ... helped lower production costs.

er on the thrust. There's no need to lift the load. Tailgate has plenty of power to force out sticky clay, mud, rocks - wipes bowl clean in a single pass. Inside of bowl is cleanly designed, with no angular obstructions to block material flow. Return of tailgate is by electric power - there are no troublesome springs.

Try one at your pit

Put a modern LeTourneau-Westinghouse Tournapull scraper to work in your pit. Use it on any dirtmoving job you wish - stripping overburden, cutting drainage ditches or sluiceways, stockpiling, refilling, landscaping, etc. Check production, check costs! You'll find these units complete cycles faster ... give you higher production at low cost. 3 scraper sizes with capacities of 9, 18, and 28 yd - diesel-powered 2wheel prime-movers with 138, 226 or 335 hp. Call for full details.





LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

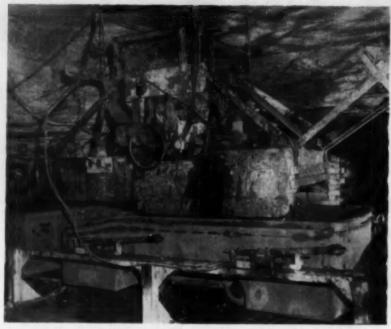
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

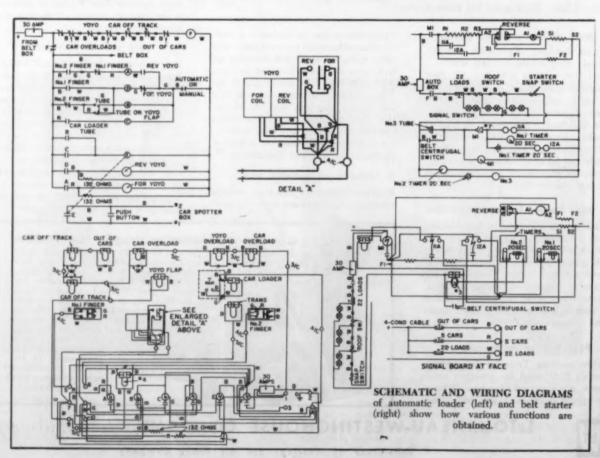
Master mechanic at Duquesne Light Co. mine uses a car-spotter, a yo-yo and a collection of tubes, switches and parts from other machines to automate loading.

ALL - ELECTRIC automatic loading point provides unattended, trouble-free loading of 3%-ton mine cars. Steel swing flaps in loading hood control on-off operation of carspotter as coal piles up in car.

Automatic carloading system provides maximum labor economy in . . .



Making a Better Loading Point



AN AUTOMATIC loading station that does just about everything but use the telephone is the latest aid to higher efficiency to be developed at Warwick mine of the Duquesne Light Co., at Greensboro, Pa. The brainchild of Michael Minnick, Warwick's master mechanic, the new loading station moves the mine cars under the belt head while preventing spillage between the cars, monitors the number of loaded and empty cars and signals this intelligence to the shuttle-car discharge station inby.

The prototype, shown in these illustrations and diagrams, was designed by Mr. Minnick and built at Warwick from a Nolan carspotter, a Goodman yo-yo and a collection of usable mercury switches and tubes, contactors and other elements cannibalized from worn units in storage.

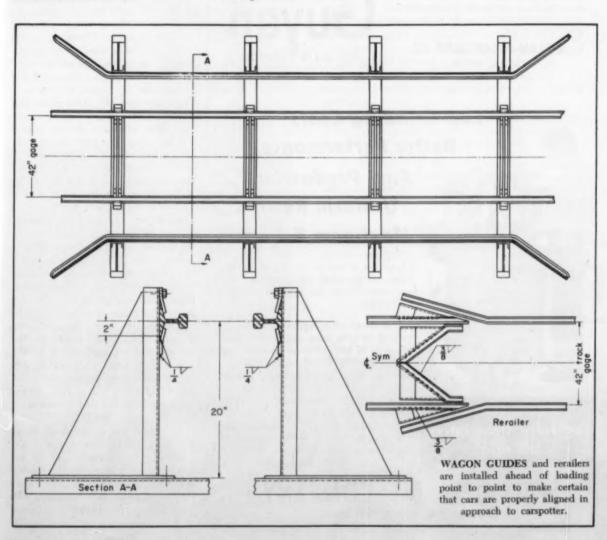
The big advantages of the automatic feeder are these:

- Labor is conserved since the loading point is unattended regardless of the number of mechanical units contributing coal to the panel belt.
- Face supervisors are informed of car-supply conditions at the loading point. Therefore, when the belt stops, the foremen are not at a loss for the reason.
- 3. The setup also includes a rerailer and a set of wagon guides ahead of the loading point to insure that all cars are on the track for proper handling by the carspotter which sets between the rails.
- The system provides for selective automatic or manual control of the panel belt, the yo-yo or the carspotter.
- 5. The loading station is 100% electric-powered.

Design Features

Warwick's automatic station results from a desire to feed cars past the loading point without the use of ropes. Also, it was desired to have full electro-mechanical operation of all components. This would make it easier for mine mechanics to repair breakdowns on the spot.

All major components of the station, including the carspotter, yo-yo and panel belt, fit this bill of particulars, and the remainder of the equipment was designed to do so. Mr. Minnick designed a special hopper to receive the stream of coal from the yo-yo, in which full-width steel flaps are swung to sense the loading conditions in the car. Such design steps were taken to insure positive action in the system. Some portion of the stream will strike the flap.



For LOADERS and **CUTTING MACHINES**

Guyan SUPER RESISTORS

 Γ HE TREND toward super power and super capacity in machinery calls for SUPER RESISTORS to keep breakdowns at a minimum.

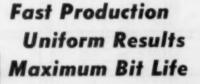
The GUYAN design takes full advantage of the space available in the resistor compartment to build a resistor of proper electrical resistance and high current capacity. The terminals are of heavy cast bronze, clamp type for rigid connections. And they are easily accessible and plainly stamped corresponding to the terminal markings on the original wiring diagram.

Available for all popular types of mining machines and loaders. No alterations necessary. Resistors are designed to fit original pockets of the machines. Write for complete information.

> GUYAN MACHINERY CO. LOGAN, W. VA.



Low Grinding Costs **Better Performance**



These are a few of the many advantages you get when you grind your bits automatically on the FAIRVIEW BIT GRINDER.

All of these advantages boil down to savings of both labor and wheels, productivity of 250 to 350 per hour, correct angles-smooth finish, more regrinds, more grinds per bit, more tons per grind and elimination of hazardous operation. It's to your advantage to use the FAIR-VIEW BIT GRINDER both in the satisfactory grinding results obtained and in the protection of your investment in expensive equipment.

WRITE TODAY for fully descriptive bulletin!

FAIRVIEW BIT COMPANY

FAIRVIEW, WEST VIRGINIA

How the System Works

As shown in the illustrations, two springload switch arms contact the sides of the cars at the loading point to control the direction of travel of the yo-yo. Reversal of the yo-yo at the proper time prevents spillage between the cars as the trip is moved forward. The stroke for reversing the yo-yo is provided by an American Mine Door electric switch throw. The steel flaps inside the hopper under the yo-yo control the on-off operation of the Nolan carspotter. These flaps are suspended on hinge pins to permit them to be deflected by the rising pile of coal in the car. The deflection of these flaps causes mercury switches, attached to the hinge pins, to close the circuit of the carspotter motor. As the trip is moved forward the flap returns to a vertical position, and its associated mercury switch opens the carspotter motor circuit to stop the forward motion of the trip while loading continues.

These are the major functions of the loading station. However, several refinements have been added by Mr. Minnick to provide fullest automaticity. For example, an extra steel flap swings over the stream of coal as it discharges from the 30-in panel belt into the yo-yo. In the event an oversize lump or some foreign object, such as a piece of a post, should come off the belt, this flap is deflected. A mercury switch associated with this flap shuts down the system, including the panel belt, until the situation is cleared at the loading station.

In this setup of the loading station there is room for 22 loads between the hopper and the turnout. A limit switch at this point closes the circuit to a single lamp in the face area when the 22nd car is loaded. The loadingpoint units and panel belt also are taken off the line. The lamp tells the face foreman why the belt has stopped. Two other lamps on the signal board are designed to let the face foreman know when he has only five empty cars remaining and when he is completely out of cars. In the latter case, the belt and loading-point equipment shut down.

Schematic and wiring diagrams of the automatic-loading hopper, carspotter and belt-control panel are shown in an accompanying illustration. Mr. Minnick calls his creation the Auto-Loader. In combination with loop haulage, it provides a maximum

in labor economy.



THE NEW BUCYRUS - ERIE

30-R

Here's a small sample of the big performance features the new Bucyrus-Erie 30-R rotary blast hole drill offers.

Big Capacity — Drills 6¹/₄ to 7⁷/₈-in. holes with rotary bits and down-the-hole tools.

Terrific Pull-Down — Hydraulic motor exerts a pull-down force of 30,000 pounds,

Infinite Selection of Speeds — Hydraulic rotary drive can be varied from 0 to 110 rpm.

Fully Self-Contained — With five lengths of pipe in its rack, the 30-R is always ready to move in and drill to a depth of 106 feet completely on its own.

Works Fast and Steady — Top drive permits continuous drilling for more than 21 feet before adding new pipe.

Always Solid, Always Level—The 30-R stands firmly on large, 20-in.-wide crawler treads . . . levels instantly with three big hydraulic jacks.

It's another OUTSTANDING B-E drill with the same rugged stamina... the same operating ease and servicing convenience that have made larger Bucyrus-Erie rotaries the most popular in the field — by far. The 30R may also be truck-mounted.

Write Dept. 2B59, Bucyrus-Erie Company, Drill Division, Richmond, Indiana, for complete information on the new 30-R.

BUCYRUS

Bullds Better Equipment

Coal Chief scoops and dumps 100 tons a minute!



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♠ Four Boom Support Strands, each 35/8" dia., support the huge boom which towers 160 feet above the ground. These Tiger Brand cables are designed for long service life.

USS American Tiger Brand Hoist Rope. Two of these 25/8" dia. shovel hoist ropes supply the guts to lift the heaviest loads.



Rigged with (USS) Tiger Brand - America's No.1 Wire Rope

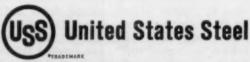
Here's the latest of the big diggers, the Coal Chief, built by Marion Power Shovel Company. It can scoop up 70 cubic yards at a bite, swing it approximately the length of a football field and dump it in piles more than 96 feet high. It makes the round trip in less than 60 seconds.

This strip mining operation is a joint venture between Simco Peabody Company and Columbus & Southern Power, Columbus, Ohio. All the coal produced will be furnished to the power company... about 8,000 tons a day.

The new shovel, like its two predecessors, is rigged throughout with USS* American Tiger Brand Wire Rope. The tremendous power of the shovel is handled by two hoist ropes 25%" diameter, and the gigantic boom is supported by four lengths each 105½ feet long, of 35%" diameter galvanized boom support strand. Each strand has a catalog strength of 768 tons, for a total of 3,072 tons.

Your equipment may not need such large wire rope, but the fact that all applications on this huge shovel are handled by standard USS American Tiger Brand* constructions emphasizes the quality of the engineering that goes into the complete line of Tiger Brand Wire Rope. For more information, write American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

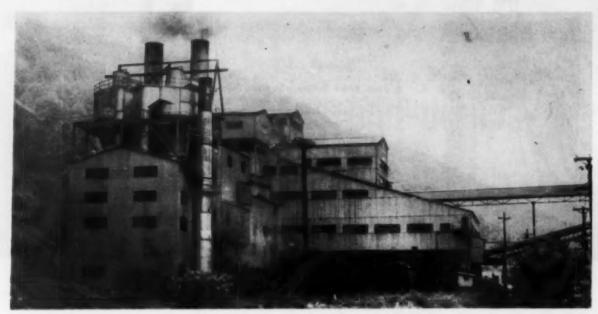
American Steel & Wire Division of



Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

6,000 tons of overburden per hour can be stripped by this new 70-cubic-yard Marion shovel built for Simco Peabody Company and Columbus & Southern Power,

SEE OUR EXHIBIT AT THE COAL SHOW



PREPARATION CENTER includes original plant at the right. Left is the new 200-tph fine-coal cleaning plant with facilities for tabling, thickening, filtering and drying 4x0 from the original plant which processes coal from three deep mines.

New Fine-Coal Plant Strengthens Omar's Market Position

A better \(^1/4\x0\) product for metallurgical use and prescription blending results from tabling, cyclone thickening, filtering, and mechanical and thermal drying of fine coal at the preparation center of the Omar Mining Co.

By Daniel Jackson Jr. Assistant Editor, Coal Age

NEW 200-TPH FINE-COAL CLEANING AND DRYING PLANT enables the Omar Mining Co., Omar, W. Va., a subsidiary of A. T. Massey Coal Co., Inc., to produce a 1/4x0 product, thus solidifying its position in the competitive metallurgical market. The resultant "prescription coal" features uniformity, low ash and high Btu count. In addition to product improvement, the recovery of 1/4x0 has increased, thus improving plant efficiency. Extensive processing of all other sizes incorporates a more-thanaverage share of good preparation practices.

The new fine-coal plant was de-

signed and constructed by McNally-Pittsburgh. It is equipped with 20 SuperDuty Diagonal-Deck coal-washing tables with a capacity of 10 tph each, Jeffrey-Traylor feeders, Allis Chalmers Screens, Heyl & Patterson cyclones, Concenco rotary distributors, Eimco vacuum filter, Reineveld centrifugal dryers and Raymond flash dryers. The 5½-story plant utilizes a total of 1,800 hp. The complete structure weighs 1,913,835 lb and is covered with 3,600 sq ft of 0.032 gage corrugated aluminum. Operation of the plant requires only two men.

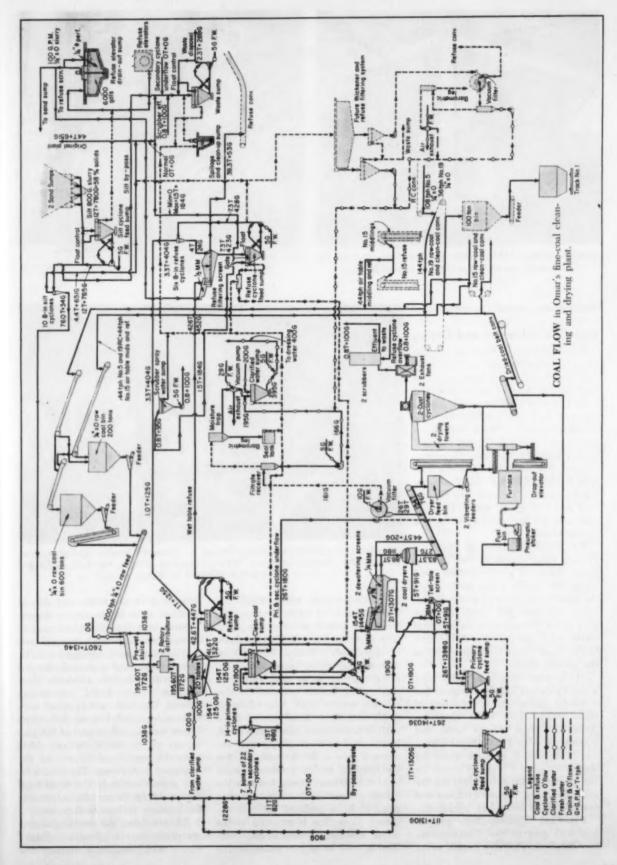
The original preparation plant supplying the 4x0 product has been in operation 12 yr and was designed to process 12,000 tpd in two shifts. The plant handles coal from three deep mines. Mine No. 5 is the largest pro-

ducer and is in the Lower Cedar Grove seam. This mine is located some distance from the plant which necessitates transporting raw coal via railroad cars. These cars are unloaded by car shakeout and the coal is conveyed into the plant by belt conveyor.

Mine No. 15 is in the Island Creek seam. Raw coal from this mine is brought to the plant in mine cars, unloaded by two rotary dumps and conveyed to the plant by belt conveyor. Mine No. 19C is in the Lower Cedar Grove seam. Raw coal is handled in the same manner as that from No. 15 but is kept separate from the Island Creek coal.

Coal from each seam is processed separately but after cleaning and sizing it can be blended or loaded directly into railroad cars. Preparation of coal at this plant will be discussed later in this article.

The idea of processing coal from the two seams separately was also included in the design of the new fine-coal plant, which employs two storage bins of 600 and 200 tons capacity to keep separate or blend the



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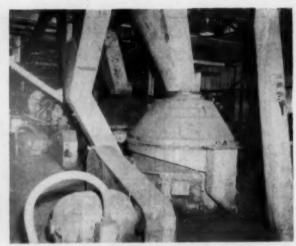
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COLLECTING CONVEYORS, carrying 4x0 product, discharge into 600- and 200-ton storage bins.



MECHANICAL DRYERS are used to cut moisture in \(\frac{1}{2} \)-in x \(\frac{1}{2} \)-mm product before it goes to thermal dryers.

1/4x0 and also provides ample storage.

Fine-Coal Cleaning and Drying

The ¾x0 product from the original plant is collected on two raw coal belt conveyors which discharge into two storage bins. Coal is then fed from either or both bins onto a 200-tph raw coal belt conveyor by Jeffrey-Traylor feeders. These feeders can be adjusted to handle various amounts of raw coal plus silt from the original plant. For example, if the raw coal feed is 192.4 tph the underflow from the silt cyclones supplies 7.60 tons of coal and 134 gal of water. The raw coal and silt are discharged onto a prewet sluice.

Silt, which is picked up from two Chance sand sumps in the existing plant, flows to a silt cyclone feed sump. Fro mhere it can go to either the waste sump or to 10 8-in cyclones. When cyclones are used, overflow goes to the Chance cone for make-up water. All or any part also can be sent to the waste sump. Underflow goes to the prewet sluice.

Fresh water supply is taken from a nearby stream but the company has a reserve water system consisting of three 600-ft deep wells supplying three 75,000-gal storage tanks and a reservoir with a 35,000-gal capacity. (This source supplies water for the entire plant.) Makeup water for the prewet sluice is supplied by the underflow from the silt cyclones and overflow from secondary cyclones.

Fine-Coal Washing-After preweting, coal goes to two Concenco rotary distributors for distribution to the



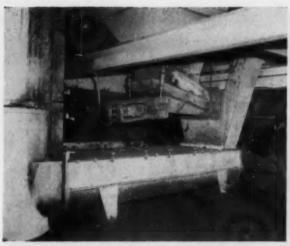
TEN-DISC VACUUM FILTER (10% ft in diameter) handles underflow from primary and secondary cyclones. Filtrate is used as dressing water on tables and filter cake is collected for drying.

20 Diagonal-Deck tables. Each distributor feeds 10 tables. Refuse from the tables goes to a refuse sump and then is pumped to a dewatering sluice equipped with 1/2-mm Wedge-Wire screen. This sluice removes a large percentage of water and minus 1/4mm solids before material is discharged onto a 4x16 Allis Chalmers single-deck Low Head screen fitted with 1/2-mm screens. Plus 1/2-mm is collected on a refuse conveyor and discharged into a 600-ton storage bin for disposal by an Interstate aerial tramway. Minus 1/2-mm flows to the refuse cyclone feed sump and then pumped to a bank of six 8-in cyclones. Underflow is returned to the refuse dewatering screen and overflow is used as pusher water on the

refuse end of the tables and also as scrubber water in the drying towers.

Clean coal from the tables goes to a clean-coal sump and is pumped onto a dewatering sluice equipped with ½-mm screens. Coal is then discharged onto two 6x16 Allis Chalmers double-deck Low Head dewatering screens. Top decks are equipped with ½-in screens and bottom decks with ½-mm screens. All or part of the plus ½ can go to either the two 36-in Reinveld centrifugal dryers or the Raymond flash dryers. The ½-in x ½-mm goes directly to the centrifugal dryers. Minus ½-mm discharges into the primary cyclone feed sump.

Effluent from the centrifugal dryers passes over a 28-mesh "tell-tale" screen which indicates oversize and



PRODUCTS FROM DEWATERING SCREENS, mechanical dryers and vacuum filters are fed to mixing conveyors.



FINISHED PRODUCT is weighed by automatic belt scale and stored in two 100-ton bins for blending or direct loading.



CENTRAL CONTROL STATION in fine-coal plant is electrically interlocked with the original plant control center. One operator is required at each station. Quality of 1/4x0 is controlled, recorded and checked at this point.

determines when screens in the dryers need to be changed. Plus 28-mesh is returned to the clean-coal sump for rescreening. Minus 28-mesh goes to the primary cyclone feed sump.

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Primary and Secondary Cyclones and Vacuum Filter-Material from primary cyclone feed sump is pumped to seven 14-in cyclones. Overflow goes to the secondary cyclone feed sump and underflow is fed to a 10disc vacuum filter.

Material from secondary cyclone feed sump is pumped to seven banks of 22 3-in cyclones. Overflow is returned to the prewet sluice or to the clean coal sump for reuse. Underflow goes to the vacuum filter. Primary and secondary underflow can be by-passed to the waste sump.

Filtrate from the vacuum filter is used as dressing water on the clean coal side of the tables. Filter cake is collected on a flight conveyor which feeds to the thermal dryer feed bin.

Overflow, Float Control and Waste Disposal—The plant has a spillage and clean-up sump, and a common waste sump. Should any sump in the plant overflow, the excess effluent will discharge into the spillage and clean-up sump which in turn is pumped to the waste sump.

The refuse cyclone feed sump, silt cyclone feed sump, clarified water sump and waste sump are equipped with float controls to regulate water

Effluent from the waste sump is pumped to a worked out section of

No. 15 mine. It travels underground for approximately 2 mi permitting solids to settle out and clear water to discharge into the natural stream, thus eliminating stream pollution. The clarified water also can be returned to the plant. This system uses two 6x10 Goyne pumps and 4,000 ft of 6-in aluminum pipe.

Normally, either 6x10 Goyne pump can handle the waste water. The second pump is so arranged that it can be used as a standby or in series if it becomes necessary to pump a larger volume of water. For further insurance against stream pollution, overflow ponds are available.

Thermal Drying-Carbon or 4x0 product from the dewatering screens, centrifugal dryers and vacuum filters are collected on a flight conveyor and discharged into the thermal dryer feed bin. This product is then fed to two paddle mixers by two Jeffrey-Traylor feeders. The mixed product then discharges into two Raymond flash-drying towers. Drop out material is picked up by an elevator and returned to the thermal dryer feed bin. Dried material is collected by two cyclones. The final product is then discharged onto a flight conveyor and then to a belt conveyor and automatically weighed by an ABC belt scale. The exhaust stacks from the two cyclone collectors are equipped with scrubbers to minimize air pollution.

After the carbon is weighed, it is treated with vaporized oil to allay dust and facilitate handling. The vapor is applied while the coal is in suspension



ORIGINAL PLANT processes coal from three deep mines. The two conveyors near the top serve Mines No. 19C (left) and 15 (right). Covered conveyor in foreground conveys from a car shake-out hopper that receives coal brought in railroad cars from Mine No. 5. Automatic aerial tramway system disposes of reject from preparation plant and refuse slate from Mine No. 15.



MAN ELEVATOR serves all floors of the new plant as an added convenience.



LABORATORY TRUCK is equipped to prepare samples in the field for analysis at the laboratory. Samples are collected at three mines and the preparation plant.

at the point where it transfers from the belt to a flight conveyor. Two quarts of oil are used to each ton of coal. The carbon is then conveyed to two 100-ton blending bins where it can be loaded separately or blended electronically. When cars are loaded, the tops are oil sprayed to keep down windage loss and also to form a partial seal against rain.

Central Preparation Plant

Differences in the characteristics of coal from the Lower Cedar Grove and Island Creek seams make it necessary to prepare them separately to obtain quality products from each seam. After cleaning and sizing they can be blended together for prescription orders or loaded separately. The original twin plant designed and constructed by Fairmont Machinery Co., has two complete processing circuits to perform this necessary requirement in two-seam preparation. Raw coal is supplied by the three deep mines previously listed. The flow of coal in either circuit is duplicated in the other.

Raw Coal Handling—R-O-M coal is fed to a dry shaker where large slate is removed. The shaker is equipped with 4- and 6-in screens. Minus 4-in is discharged onto two 5x14 Allis Chalmers double-deck Ripl-Flo vibrating screens to separate the ¼x0 product. All ¼x0 from this plant is collected on two belt conveyors and conveyed to the finecoal plant. The 4x¼ discharges onto a common flight conveyor which goes to the Chance cone washer.

The 6x4 coal from the dry shakers passes over picking tables and then is combined with the 4x¼. The 6x¼ then passes over a tramp-iron magnet and discharges onto a 6x16 Allis Chalmers Low Head Screen for further removal of ¼x0 resulting from handling and conveying the 6x¼ to the washer.

The plus 6 in from the dry shakers is of two types. One is a firm lump and the other a more-friable type.



QUALITY IS SAFEGUARDED by modern well-equipped laboratory at the preparations center. The lab is manned by six men and a fuel analyst. Standard analyses as well as special requests from sales department are performed.

Plus 6-in firm coal is rescreened to remove undersize and then loaded into railroad cars. Plus 6-in friable coal is crushed to 2 in and discharged onto an Allis Chalmers double-deck vibrating screen for separation of 4x0. The 2x4 is discharged onto the flight conveyor containing the 6x4. coal.

Refuse from the dry shaker is crushed to minus 6 in and conveyed to a common refuse conveyor.

Dense-Media Washing—A 13 ft 6 in Chance-cone washer is used to clean the 6x¼ product. A Type 50P2 sand, 95% between 30 and 100 mesh, is used in the washer.

Coal from the washer is discharged onto a stationary dewatering and desanding screen. Effluent is flumed to a 22-ft sand sump. Clean coal is spray-washed by a battery of freshwater sprays before going to the classifying screens. All minus %-in is separated for further sizing and dewatering on a 6x16 Allis Chalmers double-deck Low Head screen equipped with 1/4- and 3/32-in screens. Material retained on top deck (¾ x ¼) is conveyed to a blending bin. The 1/x0 is sent to the fine-coal plant and minus 3/32 is flumed to the sand sump. The remaining 6x% on the screen is further classified.

Sizes normally made are 6-in block, 6x3 egg, 3x2 stove, 2x1¼ nut, and 1¼x¼ stoker plus any combination.

Refuse Handling-Reject from the washer is elevated to a 4x10 Allis Chalmers Ripl - Flo double - deck screen to recover water, sand and silt. This material is flumed to the sand sump. Sand is picked up and returned to the washer. The light or worn sand and fine coal overflows into the silent zone of the sump. Water is recirculated to the washer and silt goes to the silt cyclone feed sump.

Refuse from the plant is collected on a common belt conveyor which discharges into a 600-ton storage bin. Final disposal is by a two-stage Interstate aerial tramway system. The first stage comprises dual units with 20 40-cu ft cars which handle refuse at a rate of 250 tph, transporting it 3,000 ft up the mountain and there discharging it into a 350-ton bin. This bin feeds the refuse into a 10ton bucket which dumps it between two mountains tops. The horizontal distance is 2,075 ft. The system is operated by one man. The two motors for the double unit are 250 hp each, with 150 for the 10-ton unit. All three motors operate at 2,300 V.

Special Facilities—Two remixing conveyors make it possible to mix various sizes to make resultant products. A special arrangement also makes it possible to crush any or all coal to prepared sizes as low as minus 1¼ in. Oversize from the crushed product is screened and recirculated.

Six loading tracks with eight loading points make it possible to load eight grades simultaneouly. One track is provided with three loading points.

A Viking hot-vapor system is used

Supervisory Personnel, Central Preparation Plant, Omar Mining Co.

H. D. Bowker, Plant Superintendent

Jack Shannon, Assistant Plant Superintendent

Herbert Green, Foreman and Equipment Inspector (Day)

George Dotson, Foreman and Equipment Inspector (Night)

John Martin, Grade Foreman (Day)

Alec Loslo, Grade Foreman (Night)

Nathan Tabor, General Foreman (Night)

Harry Hatfield, Maintenance Foreman (3rd shift)

D. H. Lee, Fuel Analyst Richard Burgess, Clerk

for dustproofing. Each individual size or fraction of a resultant size is treated separately. For example, in oil-treating 2x0 nut-slack, the 2x0, 11/4x and 1/4x0 are treated separately before being blended together. This procedure insures uniform dustproofing. All sizes, including lump, can be oil treated.

Freezeproofing is accomplished by applying calcium chloride to the coal. Three Syntron vibrating feeders are centrally located to feed chloride from bins through 6-in pipes to points of application. A spreader on the discharge end of the pipes distributes a thin, even layer on the coal as it is loaded.

A central loading platform is so located as to permit one man to see and control the loading of railroad cars on the six tracks. Air-operated diversion chutes on the loading booms permit uninterrupted loading while changing cars.

One-shot high-pressure lubrication is supplied by three Farval units—one at each headhouse and one centrally located in the plant. A total of 547 points are covered by this system. All points serve plain bearings.

The installation provides metered lubrication, reduced labor costs and a marked decrease in the amount of grease used, in addition to permitting use of a lower-price, lower consistency grease with equal results. The fine-coal plant is equipped with a separate Farval unit to lubricate 58 bearings. (continued)



A freight elevator facilitates handling supplies and equipment contrasted to the usual block and falls or chain hoists. The elevator serves all eight floors. A man-elevator also serves all floors of the new plant.

A central vacuum cleaning system is used to help keep the plant clean. Manifolds on the different floors make it possible to plug in vacuum cleaning attachments.

The plant communication system consists of dial operated telephones placed at strategic locations and connected to a central switchboard. Loud speakers, in addition to telephones, permit supervisors and mechanics to be paged. This system is also used for group messages to the various operators without calling them away from their stations. "This is of untold assistance when it becomes necessary to change grades, start oil treatment or summon repairmen in an emergency," notes H. D. Bowker, plant superintendent.

Quality Control

Carefully worked out inspection and quality-control programs are in effect at the Omar operation. The programs include visual inspection as well as control of the washers and evaluation of the quality of coal produced and loaded into railroad cars.

To provide quality control, the company has a modern laboratory located at the central preparation plant. The lab, under the direction of D. H. Lee, fuel analyst, is manned by six men who continually sample coal from the three deep mines and the preparation plant. General practice is to sample cars of minus 2-in coal each shift. Other tests, such as, screen tests and presampling of plus 2-in, are made continuously.

Cards with a complete analysis of each car of coal are sent to the shipping department to keep customers informed of the quality of coal they receive. Special sampling is done at the request of the sales department. A special truck is equipped to prepare all samples in the field.

In addition to analyzing prepared coal at the plant, the company has a program which includes taking channel samples every 1,000 ft of advance, supplementing them with core drill samples to determine what to expect in the future, thus facilitating plans for handling changes, if they occur, in the characteristics of coal that will be mined.

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CHECK THE NEW

Connellsville MINICAGE

(TRADE MARK)

A First in Service Elevators for Preparation Plants

REDUCES DOWN TIME... ELIMINATES
FATIGUE... SPEEDS MAINTENANCE

Yes, the Connellsville MINICAGE is truly the first of its kind! Here is an elevator that provides fast, easy service economically . . . automatically! What's more, initial cost and installation is surprisingly low.

The Connellsville MINICAGE is designed to travel on the outside wall of an existing preparation plant or on the inside of future-planned facilities. Saves time and labor . . . moves automatically from floor to floor. Reduces non-productive manhours caused by fatigue and early "knock-offs" . . .

The all-steel cage, with its pantograph-style gate, has a capacity of 1000 lbs. and up. It operates at speeds of 50 to 75 feet per minute. Safety mechanisms are operated by governor rope.

The sturdy fabricated steel structure of the MINICAGE is mounted in place, and safely attached to the wall. Wall openings at each level are protected by hinged safety doors.

Drive assembly of the MINICAGE is installed at the top of the structure and is coordinated with the cage and level doors by a control system. The entire MINICAGE installation complies with federal and state mining laws.

For additional information and details about the Connellsville MINICAGE, write for Bulletin No. M559 to Connellsville Manufacturing and Mine Supply Company, Connellsville, Pa.



COAL AGE · April. 1959

NOW! FOUR JALLOY

HEAT-TREATED, ABRASION-RESISTANT

The new Jalloy series includes four types designated by suffix numbers,

JALLOY

(Brinell range 260/300)

Has excellent low temperature impact properties. Can be bent across the width (axis of bend at right angles to direction of rolling) on a brake press or on roll forming equipment. Where forming with the axis of bend parallel to the final rolling direction, Flange Quality can be supplied on application. Recommended minimum inside radius is 2t (t =plate thickness) up to $\frac{1}{2}$ " inclusive in thickness and 3t over $\frac{1}{2}$ " in thickness.



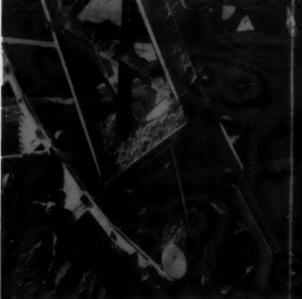
(Brinell range 300/340)

Has improved abrasion resistance over Jalloy-280. Can be bent across the width (axis of bend at right angles to direction of rolling) on a brake press or on roll forming equipment. Where forming with the axis of bend parallel to the final rolling direction, Flange Quality can be supplied on application. Recommended minimum inside radius is 3t (t =plate thickness) up to $\frac{1}{2}$ " inclusive in thickness and 4t over $\frac{1}{2}$ " in thickness.



JALLOY-280

In this cement agitator bottom saves time and money in maintenance. Jalloy offers low initial cost. And, it lasts six times longer than structural carbon steel.



JALLOY-320

Is used in these round-bottom scoops for its formability and abrasion resistance, which effect savings in manufacture and operation.

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The JALLOY series will best meet your requirements for:

Abrasion resistance • Atmospheric corrosion resistance Impact resistance • Forming properties

All at minimum cost to attain proven results

Y HARDNESS RANGES

PLATES FOR LONGER WEAR, LESS REPAIR

representing the mean of Brinell hardness range, and by color code for easy identification.

JALLOY

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360

(Brinell range 340/380)

Has excellent abrasion-resistant properties. For best results in welding all Jalloy ranges, a low-hydrogen AWS Spec. E 100 XX Series is recommended. Preheating and postheating are not normally required but are sometimes used in special designs to avoid concentrated stress conditions. When preheating or postheating in those cases, a range of 200/400° F. is recommended.

JALLOY

400

(Brinell range 380/420)

To be used for flat applications. This type has maximum abrasion resistance. All Jalloy hardness ranges are furnished only in the heat-treated condition because the chemical composition of alloy steels alone does not provide the optimum physical properties. Uniformity of strength, hardness and toughness are achieved by close temperature controls during heat treating operations.



JALLOY-360

Jalloy-360 in the bottom, and Jalloy-400 in the runners, give this dump body resistance to the impact of loading, and the abrasion of dumping aggregate materials.



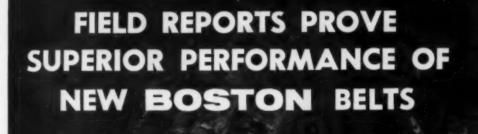
JALLOY-400

Lasts three times as long as mild steel in this particular application. Aprons in these screens are subjected to severe abrasion from sliding 1-inch granite.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA





DIGEST OF PERFORMANCE FIGURES FOR 1296 BELTS*

44% increase in consistency of tensile strength

6% increase in tensile strength

130% improvement in consistency of elongation

Compared to belts previously manufactured

HERE'S WHAT DOES IT!

The startling figures above are a direct result of two major belt manufacturing advancements - both developed by, and exclusive with, Boston Woven Hose & Rubber Co.

ADVANCEMENT #1 BALANCED BELT CONSTRUCTION for the first time equalizes ply stress so that each ply pulls its full share of the load. BBC eliminates lazy plies. A BOSTON exclusive because only BOSTON can combine Electronic Tension Controls with Rotocure, the continuous method of vulcanization, which assures uniformity throughout the belt.

ADVANCEMENT #2 DULON markedly improves the aging characteristics of BOSTON belts. An exclusive BOSTON research development, the tough specially treated cover compound stays resilient longer . . . makes the belt much more resistant to abrasion, gouging, tearing and oxidation.

BALANCED BELT CONSTRUCTION plus DULON add up to

longer belt life . . . less trouble in service . . . greater economy.

BOSTON

BOSTON WOVEN HOSE & RUBBER COMPANY

BOSTON 3. MASS.













MATTING

The **NEW** Cincinnati Mine short pitch (heavy duty) continuous miner chain

IS NOW 1st CHOICE



INCINNATI MINE MACHINERY CO.

ecialists in cutting equipment for over 34 years

CINCINNATI'S SPECIALLY DEVELOPED FIVE TOOTH SPROCKET

This five tooth CINCINNATI SPROCKET with its supporting ledges on both sides of teeth stabilizes chain and machine, thereby reducing wear on both chain and machine.

FROM DORR-OLIVER

... for the preparation plant ... for the

At the American Mining Congress 1959 Coal Show, see an actual demonstration of FluoSolids...

Dorr-Oliver's thermal drying technique

Yes... In booth 721 at the 1959 Coal Show, an actual scaled-down demonstration unit of Dorr-Oliver's FluoSolids system for coal drying will be exhibited! You will actually see the principles of true fluidized drying, a process developed and pioneered by Dorr-Oliver for the coal industry.

In addition, a scale model of Inland Steel's 230 tph thermal drying plant, designed and constructed by D-O on a turnkey basis, will be shown.

FluoSolids has been accepted by the industry. To date, 6 units are either now on stream or approaching start-up date, drying a total of 1300 tons per hour.

FluoSolids has been accepted because of . . .

Extremely high capacity — up to 800 tph per dryer.

Wide size range of feed — from filter cake directly to 1½" x 0 coal.

High water removal — up to 50 tph per unit.

Complete instrumentation — insures uniformity of product moisture.

Low maintenance — no moving parts exposed to dust or hot gas.

No size breakdown - means less fines in product.

A more recent FluoSolids installation is at United States Steel's Gary, West Virginia, plant. This drying plant comprises two 14' I.D. Dryers plus auxiliaries. Actually designed to remove 36 tph of water from 600 tph of ½ "x0 coal, the system has nearly doubled this figure of water removal.

Upper section of the first installation of the FluoSolids system showing dryer and wet coal feeder. Installed at Lynville Coal Company, this system, occupying only 1350-sq. ft., has been an stream nearly 4 years, handling an average of 100 tph of ½" x 0 coal. Actual feed variations have ranged from 69 tph to 107 tph with feed moisture varying from 10.1% to 22.4%. These are easily taken in

Silhouetted view of Oliver Horizontal Filter Initial and operating costs are low with this unit. By utilizing gravity, filtration efficiency is improved to a marked degree.

cleaning and refuse circuits

Also featured at the Coal Show will be D-O equipment units for the coal cleaning and refuse circuits. These include a demonstration model of the DorrClone Separator equipped with the Siphontrol automatic under flow density control. tilizing centrifugal force in place of gravity, the DorrClone is an extremely compact, high capacity unit, for single or multiple stage fine coal recovery and desliming in the 1/4" to -200 mesh range.

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For high dewatering capacity, the American® Disc Type Filter and the Oliver Horizontal Filter are a team that's hard to beat for handling a wide ize range from 1/2 inch to 0 mesh. Application of either, of course, depends upon the characteristics

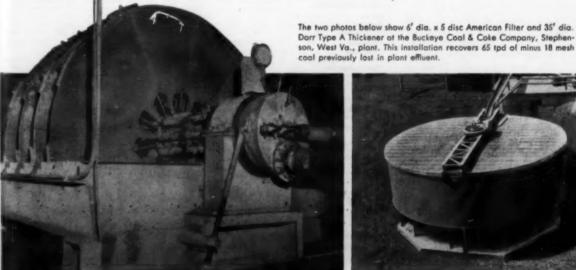
However, both units are alike in that they are continuous vacuum dewaterers with exceptionally high capacity and solids retention charactertics. Each shows less than 1 percent solids in the filtrate and there is no particle degradation.

In the fine coal recovery and refuse circuit, D-O's Thickener-Pump-Filter combination provides a highly effective method for recovering previously lost product, reclaiming process water and minimizing stream pollution.

The complete Dorr-Oliver coal story will be available at the Coal Show, with working models and/or illustrations and flowsheets.

Drop in at booth 721 while at the show, particularly if you are concerned with a specific problem regarding coal drying, cleaning or recovery. In any event come in to pick up a copy of bulletin 7101. Just off the press, it covers the complete D-O line for the coal industry. If your schedule does not permit your attendance at the show, just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut for your copy.







COAL AGE . April. 1959

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Table I—1958 Coal Purchases of Electric Utilities by Using States, and Origin of Coal by Producing Districts and States East of the Mississippi, in Thousands of Net Tons

DESTINATION								HODU	CING	SIAI	E AN	D DIS	TRICT							
NEW ENGLAND REGION	Pa. Anth.	Md.	Pa.	Pa.	W. Va.	4 Ohio V	6 V. Va.	Va.	7 W.Va.	8 Ky. E.	8 Tenn.	Va.	W. Va	. Ky. 1		II Ind.	12 lowa	Ala.	13 Tenn.	To-
Connecticut	-	-	1,333	30	360	-	000	-	34	-	-	1000	-	-	-	-	-	-	_	1,75
Massachusetts	-	2	685	49	2	-	-	_	351	_	-	Billion	204	_	-	-	-	-	-	1,29
New Hampshire	Carrie	_	-	_	nam.	-	-	-	-	141	_	-	16	_	-	-	-	-	-	15
TOTAL	-	2	2,018	79	362	-	-	-	383	141	_	_	220	_	-	_	-	-	-	3,20
MIDDLE ATLANTIC	REGI	ON																		
New Jersey	. 4	-	*743	79	2,182	-	-	-	_	-	-	-	-	0000	-	_	_	-	-	13,00
New York		_	3,433	460	4,469	74	-	-	_	_	-	-	etionic .	-	_	_	-	-	-	8,45
Pennsylvania			4,224	5,937	4,046	-	304	-	-	-	-	_	-	-	-	_	-	-	_	17,00
TOTAL	2,597	-	8,422	6,476	10,697	74	304	-	-	-	-	-	-	-	-	-	_	-	-	28,57
EAST NORTH CENT	TRAL	REGIO	IN																	
Illinois	-	-	_		_	-	-	_	-	-	contin	_	-	3,615	13,767	483	_	-	-	17,86
Indiana		-	-	_	-	-	-	_	_	207	-	_	1.019	2,665	120	7,342	_	-	_	11,35
Michigan		_	180	-	390	4,563	-	-	-	512	-	29	b1.782	772	359	96	_	-	-	8,68
Ohio		-	387	306	2,017	10,352	_	-	_	417	-	_	• 2,037	373	-	_	_	_	-	15,88
Wisconsin		-	-	251	94		100	-	-	***	_	_	_	1,718	2,452	67	-	-	_	4,83
TOTAL		-	567	557	2,501	15,087	100	-	-	1,136	-	29	4,838	9,143	16,698	7,988	-	_	-	58,64
SOUTH ATLANTIC	REGIO	IN																		
Delaware	-	1-	56	9	246	-	_	-	-	-	-	-	-	90000	-	-	-	_	-	31
Disk of Columbia.		72	321	60	24	_	-	48	64	_	-	-	-	-	-	-	-	-	-	58
Florida	-	-	-	-	-	-	-	-	-	-	4250	-	-	142	-	-	-	204	-	59
Georgia		-	-	-	-	-	-	-	_	373	486	-	-	528	-	-	-	596	-	1,98
Maryland		86	1.748	Market N	498	_	-	-	-	_	-	-	-	-	_	-	-	-	-	2,33
North Carolina	*****	_	-	-	-	-	-	-	66	728	688	1,106	1,221	_	-	-	-	-	-	3,84
South Carolina	-	-	-	-	-	-	_	-	-	88	-	128	-	-	-	-	-	_	_	21
Virginia	-	-	-	-	95	-	-	441	430	371	-	1,148	2,197	-	-	-	-	-	_	4,68
West Virginia		_	-	-	1,272	1,382	437	matte.	9	-	-	_	2,140	-	-	-	-	-	-	5,24
TOTAL	-	158	2,125	69	2,135	1,382	437	489	569	1,560	1,424	2,382	5,558	670	-	-	-	800	-	19,75
EAST SOUTH CENT	RAL I	REGIO	N																	
Alabama	-	-	-	_	-	_	callege	_	-	-	-	-	_	1,609	17	-	-	2,803	1,060	5,41
Keetucky		-	_	-	_	-	-	_	_	653	_	-	-	3.924	2,991	_	_	-	-	7,56
Tennessee		-	-	-	-	-	_	_	-	596	3,253	1,153	13	3,974	107	-	-	-	598	9,69
TOTAL	_	-	-	-	_		-	_	_	1,249	3,253	1,153	13	9,507	3,115	-	-	2,803	1,658	22,75
WEST NORTH CENT	RAL	REGIO	INI																	
lowa	-	_	_	-	-	-	-	-	-	-	-	-	-	2	967	.5	170	-	-	1.14
Minnesota		-	-	_	5	383	30	agents.		-	classo	10	-	204	2.00	-	_	-	_	1.58
Missouri		-	_	_	-	-		_	_	_	_		_		1.160	_	0000	-	man	1,16
South Dakota		-	-	_	-	-	-	-	-	-	-	_	_	_	3	_	_	_	_	2,20
										0 0										

Total Table I....... 2,597 160 13,132 7,181 15,700 16,926 871 489 976 4,086 4,677 3,574 10,629 19,529 22,876 7,993 170 3,603 1,658 136,827 (1) See Table II (a) Includes some W. Va. 3; (b) includes some Ky. 8; (c) includes some Ky. 8; (d) includes some Ky. 8.

Coal for Power

COAL-USE DATA for the accompanying tables was compiled by Keystone Coal Buyers Manual, a Coal Age affiliate, from replies received from individual electric-utility companies during November and December, 1958, and January, 1959, in response to a Keystone survey. The survey covers 171 coal-burning power companies with total coal purchases in 1958 of 141,915,279 tons of bituminous, anthracite and lignite. These companies account for 91% of the estimated 156,000,000 tons purchased by electric utilities in 1958.

Totals at the bottom of vertical columns show production of coal for power-plant use by state and producing district. Totals at the right of horizontal lines show consumption of coal in power plants by states and regions.

Also available from Keystone (330 West 42nd St., New York 36, N. Y.)

Table II—1958 Coal Purchases of Electric Utilities by Using States, and Origin of Coal by Producing Districts and States West of the Mississippi, in Thousands of Net Tons

DESTINATION	PRODUCING STATE AND DISTRICT												
WEST NORTH CEN-	15 Kans.	15 Mo. (15 Okin.	16 Colo.	17 Colo.	18 N. Mex.	19 Wyo,	20 Utah	21 N. D.	22 Mont.	To- tal		
Kansas	153 45	158		6 -	==	=	-	=		=	82 311 242		
Missouri	254	=	=	3 - - 5 -	1111	===	= - 161	1111	949 88	===	1,473 254 949 265		
TOTAL	526	1,525	1.3	4 -	-	-	161	-	1,234	-	3,580		
MOUNTAIN REGION													
Colorado	-	11111	===	21 = = =	29. - - 5.	16	= = 366	488		- ₇₂	512 72 10 546 366		
TOTAL,	-	-	-	21	9 34	9 16	366	488	-	72	5,000		
Total Table II	526	1,525	13	4 21	34	9 16	-527	488	1,234	72	5,090		

is a 32-p breakdown of coal purchases by the individual power companies in 1958, showing states and districts of origin. Wherever possible, this breakdown also includes estimates of coal purchases by these companies in 1959, 1960, 1961, 1962 and 1965. An additional feature of this kit of materials, which is priced at \$10, is a forecast of oil and gas consumption among power companies burning 50% of the total of these fuels.

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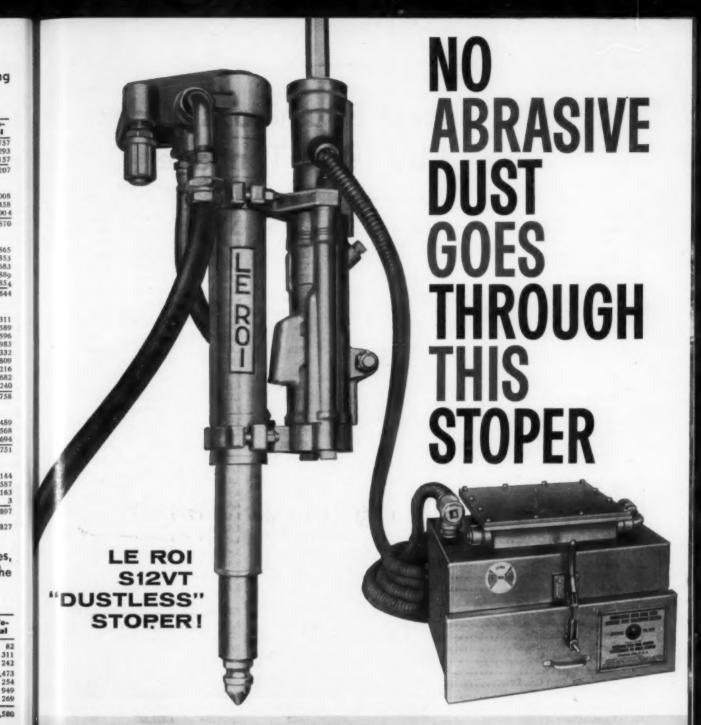
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Abrasive dust will never take this fast, hard-hitting stoper out of action! The exclusive Le Roi dust-collecting system enables you to get miles of trouble-free drilling footage in wet, soft, or hard formations. It protects the tool as well as the operator - lowers dust-count well below wet-drilling standards.

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The S12VT draws cuttings through 5-hole CRD or Vac-Nu-Matic® bits. Dust is then passed through the hollow drill steel and out the chuck housing - not through the stoper - and into the dust box. The powerful suction keeps hole clean for faster, easier drilling prevents stuck steels regardless of strata conditions.

This amazing "dustless" drill is light — it's easy to use and move. All controls are on the feed leg for convenient operation and greater operator safety.

Check all the features of the S12VT -ask your Le Roi distributor about it today! Or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI **NEWMATIC AIR TOOLS**



RTABLE AND TRACTAIR AIR COMPRESSORS . STATIONARY

Bistributed in the Coal Fields by: Acme Machinery Company, Williamson, West Virginia, and Equipment Service Company, Inc., Birmingham, Alabama.

The 50 Biggest Bituminous Mines Ranked by 1958 Tonnage

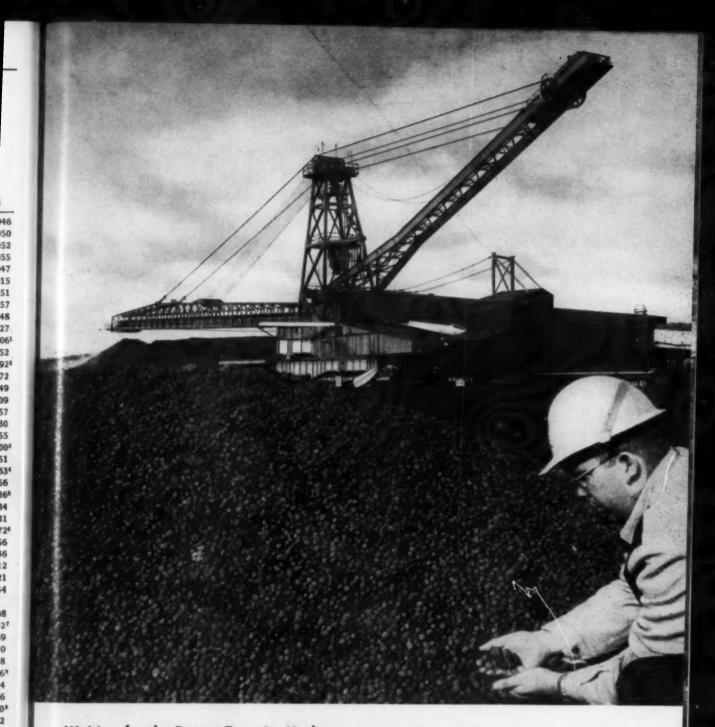
					PRODUCTION			
	COMPANY	NAME OF MINE	STATE	1958	1957	1945		
1.	U. S. Steel Corp	*Robena (C)	Pa.	3,500,311	4,303,146	New 1946		
2.	Freeman Coal Mining Co	*Orient No. 3	III.	3,032,634	3,010,200	New 1950		
3.	Peabody Coal Co	*Peabody No. 10	III.	2,902,215	3,677,757	New 1952		
4.	Hanna Coal Co	Georgetown No. 12 (S)	Ohio	2,624,107	2,754,836	1,942,055		
5.	Clinchfield Coal Corp	*Moss No. 1	Va.	2,402,804	2,776,126	New 1947		
6.	Eastern Gas & Fuel Assoc	Kopperston 1 & 2	W. Va.	2,361,651	2,343,298	1,173,915		
7.	U. S. Steel Corp	*Lynch No. 32 (C)	Ky. E.	2,329,588	2,441,451	New 1951		
8.	Peabody Coal Co	*River Queen (S)	Ky. W.	2,167,866	180,075	New 1957		
9.	Peabody Coal Co	*Ken (S)	Ky. W.	2,063,322	2,197,138	New 1948		
10.	Jones & Laughlin Steel Corp	Vesta No. 5 (C)	Pa.	2,055,706	2,196,668	1,243,827		
11.	Old Ben Coal Corp.	No. 9	III.	1,981,918	1,842,672	162,006		
12.	Central Ohio Coal Co	*Muskingum (C) (S)	Ohio	1,952,608	1,727,777	New 1952		
13.	Mathies Coal Co	Mathies	Pa.	1,901,583	3,001,494	59,992		
14.	Jones & Laughlin Steel Corp	Shannopin No. 2 (C)	Pa.	1,787,650	1,231,060	548,272		
15.	Pocahontas Fuel Co., Div	*Itmann	W. Va.	1,769,831	2,502,354	New 1949		
16.	Eastern Gas & Fuel Assoc	Federal No. 1	W. Va.	1,708,748	2,162,451	1,692,509		
17.	Peabody Coal Co	*River King (S)	I11.	1,694,315	552,365	New 1957		
18.	Duquesne Light Co	Warwick (C)	Pa.	1,642,823	1,681,570	861,930		
19.	Gibraltar Coal Corp	*Gibraltar (S)	Ky. W.	1,626,376	1,588,595	New 1955		
20.	Inland Steel Co	Price (C)	Ky. E.	1,613,550	1,556,075	1,430,000		
21.	Freeman Coal Mining Co	*Crown	III.	1,578,624	1,602,483	New 1951		
22.	Consolidation Coal Co	No. 9	W. Va.	1,568,410	1,960,422	533,463		
23.	Christopher Coal Co	*Humphrey No. 7	W. Va.	1,493,516	1,689,028	New 1956		
24.	Amherst Coal Co	McGregor	W. Va.	1,460,011	1,741,831	811,136		
25.	Powhatan Mining Co., Div	No. 1	Ohio	1,433,678	1,481,907	847,934		
26.	Ence Coal Mining Co	Enos (S)	Ind.	1,432,788	1,476,176	1,314,831		
27.	Olga Coal Co.	Olga	W. Va.	1,426,800	1,790,700	1,356,772		
28.	Clinchfield Coal Corp.	*Moss No. 2	Va.	1,425,109	1,206,551	New 1956		
29.	Bethlehem Mines Corp	*Idamay No. 44 (C)	W. Va.	1,415,169	2,176,888	New 1946		
30.	Alabama Power Co	Gorgas (C)	Ala.	1,407,882	1,559,701	274,512		
31.	Truax-Traer Coal Co	Red Ember (S)	III.	1,400,350	1,486,983	1,349,521		
32.	U. S. Steel Corp.	Gary No. 2 (C)	W. Va.	1,395,333	1,932,275	1,711,444		
33.	Semet-Solvay Div., Allied		W. Va.					
	Chemical Corp	Harewood (C)		1,358,156	1,715,647	1,329,208		
34.	Powhatan Mining Co., Div	No. 3	Ohio	1,319,308	1,469,209	942,142		
35.	Bethlehem Mines Corp	No. 41 (C)	W. Va.	1,319,205	1,744,230	1,802,669		
36.	Pocahontas Fuel Co., Div	Bishop	W. Va.	1,317,743	2,079,312	1,243,800		
37.	Snow Hill Coal Corp	*Green Valley	Ind.	1,313,872	1,269,387	New 1948		
38.	Peabody Coal Co	St. Ellen	III.	1,285,925	1,218,768	449,696		
39.	Pocahontas Fuel Co., Div	Amonate	W. Va.	1,259,501	1,671,657	1,242,924		
10.	Eastern Gas & Fuel Assoc	Keystone	W. Va.	1,224,397	1,505,684	1,218,086		
11.	Christopher Coal Co	Arkwright No. 1	W. Va.	1,221,278	1,740,752	547,550		
12.	Youghiogheny & Ohio Coal Co	Nelms	Ohio	1,216,284	1,372,857	901,202		
13.	Peabody Coal Co	*White City (S)	Ky. W.	1,213,544	1,372,410	New 1956		
14.	Lorado Coal Mining Co	*No. 8	W. Va.	1,208,878	1,467,700	New 1953		
15.	Sunnyhill Coal Co	*No. 8 (S)	Ohio	1,204,570	1,070,000	New 1947		
16.	West Kentucky Coal Co	*East Diamond	Ky. W.	1,195,390	1,297,720	New 1945		
7.	Freeman Coal Mining Corp	*No. 4	III.	1,189,907	1,220,034	New 1952		
8.	West Kentucky Coal Co	*Pleasant View	Ky. W.	1,189,495	1,363,403	New 1949		
9.	Christopher Coal Co	Osage No. 3	W. Va.	1,186,521	1,807,220	996,949		
0.	United Electric Coal Cos	Buckheart No. 17 (S)	III.	1,151,729	1,234,861	902,465		
	TOTAL OUTPUT, 50 MINES			82,932,979	90,452,904	28,890,810		
				0=120=1212	20,732,207	20,030,010		

SYMBOLS: (C) Captive Mines. (S) Strip Mines. * New mines since 1945.

'Mine under development, opened in 1945. * Pittsburgh Coal Co., mine
under development. * Wheelwright mine. now part of Price. * Jamison

Coal & Coke Co. Logan County Coal Corp. Carter Coal Co., operated as 2 mines. Rail & River Coal Co. Perry Coal Co. Consolidation Coal Co.

Source: Keystone Coal Buyers Manual, an affiliate of Coal Age.



Waiting for the Run to Taconite Harbor. This is a portion of Erie Mining Company's vast operation at Hoyt Lakes, Minn. Here taconite is mined, crushed, powdered, and rolled into tiny balls. Each year millions of tons of these pellets are shipped by rail to Taconite Harbor on Lake Superior, 74 miles away. At the port they begin the second stage of their journey to various steel mills.

That huge machine you see at work is the pellet-stacker, which dumps the loads from the agglomerating plant into a storage area. Rigged throughout with Bethlehem wire rope and bridge strand, it employs cables ranging in size to 3¼ in. This mechanical giant is a tough taskmaster, but the Bethlehem ropes have been equal in every way to the rugged work which has been assigned to them.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Expert Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem Wire Rope

BETHLEHEM STEEL



AC SHUTTLE CAR GETS HIGH PRAISE IN TOUGH TEST

THEY are proving out the latest equipment and methods at Pittsburg & Midway's Colonial Mine, Madisonville, Kentucky, before switching from strip to underground operation.

Jeffrey equipment was tried out in rugged comparative tests for all-out production. Performance of Jeffrey's 67-AC-powered shuttle car was checked at every step. Precise time studies were made. Mining company officials summed up results: "That Jeffrey equipment should make a darned nice, profitable operation!"

In the initial operation, Pittsburg & Midway had a 76-B Colmol working on room-and-pillar mining in a $6\frac{1}{2}$ '-7' vein. The shuttle car loaded by the Colmol, traveled an average distance of 300' on grades up to 23% to a ramp, and discharged onto a belt which in turn dumped into trucks.

After test results were in, Jim Miner, general manager, W. "Deck" Humphrey, mining engineer, and Bill Moman, foreman, had special praise for such features of the shuttle car as:

Two speed discharge conveyor Reversible discharge conveyor Ease in handling Smooth acceleration

Get all the facts from your Jeffrey district representative or write The Jeffrey Manufacturing Company, 912 North Fourth Street, Columbus 16, Ohio. Then see all the advantages firsthand, by putting the 67-AC to work at your operation.

You're invited! Visit Jeffrey at the Coal Show... Booths 2743, 2755, 2843, 2855

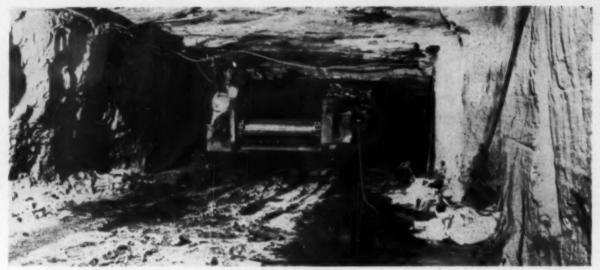


CONVEYING * PROCESSING * MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING



Jeffrey's 67-AC shuttle car travels on grades up to 23% to unlead onto belt conveyor. Available in capacities up to 9.2 tons.



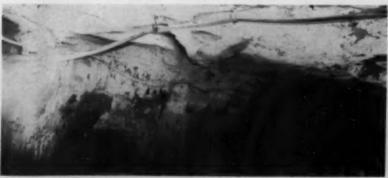


PLASTIC CABLES, like the one on this shuttle car, stand up well under tough mining conditions.

Plastic Cables for Deep Mining

Finer-stranded, plastic-jacketed trailing cables, now in use at Pittsburgh Coal Co. mines, show a record of increased tonnage before replacement is necessary.

FLEXURAL ENDURANCE, a result of fine-strand construction, features new cables.



PITTSBURGH COAL'S rules for cable handling help to increase cable life.

By C. William Parisi, Director of Safety, and Thomas Blandford, Assistant to the Mining Engineer, Pittsburgh Coal Co., Library, Pa., and J. Vincent McBride, Chief Engineer, Plastic Wire & Cable Corp., Jewett City, Conn.

PLASTIC MINING MACHINE CABLES are opening up extended potentials in both safety of operation and length of safe service life. They provide another step in the evolution of mine cable constructions which has been taking place over the years.

The Pittsburgh Coal Co.'s experience with 25,200 ft of plastic cable over periods up to 13 mo indicated an increase of at least one-third in coal production per cable. This, it was felt, warranted the installation of plastic cables in two of the larger mines of the company. The transition to plastic cables is also underway in other mines.

The cables feeding mining machines are the vital links providing the power essential to efficient operation of the machines. Anything serious that happens to the cable immediately affects the machine and is likely to cause interruptions in production. The cable is of necessity exposed to handling by the operating personnel and to damage by

the machines since it must be used right in the midst of the mining operation.

In gassy coal mines it is essential that explosion proof permissible electrical equipment be used. With the severe operational abuse involved, and its use close to the face, the cable is a likely source of ignition or fire hazard. Consequently, it is vital that mining-machine cables represent the absolute maximum in both safety and serviceability.

Testing the Cable

To measure the basic qualities of nine cables the Bureau of Mines makes standard flame-resistance and damage-resistance tests in accordance with Schedule 2F. In the flame test short lengths of cable are heated with 500% of rated current to a conductor temperature of 400 F after which a Tirrill gas-burner flame applied to the exterior of the cable for one minute following which both the current and the flame are cut I. After this test only a minor deee of damage and a 4-min duraion of flame is permitted in onsidering the cable acceptable for liting. In the damage-test the cable is laid across the rails of a conventional mine track and the cable is ren over by a 7-ton loaded mine car. While this test originated in a period when tracks ran up closer to the face, it still represents an excellent overall physical abuse test. The cable is considered as having qualified if there are no more than 10 failures to the rails or between conductors after 50 car runovers (100 test spots).

In recent years the Bureau of Mines has considered the flame test as the basic qualification test for mine cables. However, it was possible that cables so qualified could catch fire under some circumstances, and numerous cases of smoke poisoning as well as several deaths have resulted from such fires. Seriously concerned over the smoke as well as the flame hazard created by cable fires, the Bureau of Mines urged development of a type of cable that would provide a much higher degree of protection against fires from either short-circuit internal ignition or from external ignition.

New Cable Designs

To meet the Bureau's challenge,

in 1956 the Plastic Wire and Cable Corp., Jewett City, Conn., the pioneer in this field, undertook to design a safer, more durable mining cable. To achieve a maximum of fire safety the design was limited to materials which would not support combustion. A special flame-retardant integral insulation-jacket was developed having an excellent balance of electrical and mechanical properties. To provide conductors capable of the longest possible service life a special finer, balanced-twist, stranded conductor was created to provide greatly improved flexibility, flexural endurance and strength characteris-

A cable of this design was subjected to the Bureau of Mines standard flame test and passed satisfactorily with flame-out occurring within a few seconds. Then tests were made at the Electrical Testing Laboratory in New York City to determine the behavior of such cable under short circuit conditions. After the cable was heated by means of overloads to 180 F to represent operational conditions, the conductors were short-circuited by a nail driven edgewise through the cable. Then 300 V, DC was switched into the cable through 150-amp fuses. At the short-circuited point the cable cleared itself promptly without burning out the fuses. After this test there was little evidence of the injury on the outside of the cable but approximately 1 in of each conductor in the area of the short-circuit had disappeared, resulting in quick clearance of the short-circuit arc.

Short-Circuit Tests

Similar tests were made by attaching a length of the new plastic cable short-circuited with a nail to a 400amp shop welder which was turned up to its maximum output. When the switch was closed there were brief fireworks resulting from the shortcircuit which cleared itself promptly. It is considered that this test is a rough approximation of the circumstances that might occur when conductors in a cable were short-circuited in service. When the conventional cables are subjected to this test they are likely to continue burning because the short-circuit arc takes place within the combustible insulation area of the cable where the flame-retardant properties of the

jacket cannot be effective in stopping the combustion in all cases.

The strands making up the flexible conductor in the new cable design are much smaller and greater in number than those used in conventional cables. As such, they have greatly increased fatigue resistance. Flexural endurance tests performed at the Electrical Testing Laboratory revealed that the finer stranding had much greater life under severe flexing than was possible with the conventional 49-, 133- and 259- wire strands used in conventional cables. If and when an individual fine wire strand does break from fatigue, it lacks the stiff needle-like effect that contributes toward short-circuit failures when the coarser strands in the conventional cables break from fatigue. In addition, the surrounding plastic is somewhat more resistant to penetration by broken strands than is the relatively tender insulation in conventional cables. In parallel Type G cables round grounding conductors provide further insurance against fatigue, breaks and short-circuit con-

Since vinyl plastic insulation materials can be made with a combination of excellent electrical characteristics and mechanical properties, they lend themselves readily to integral insulation-jacket design. In this construction a single extruded covering constitutes a wet location grade of electrical insulation from the conductor to the outside and at the same time is very resistant to mechanical damage thus serving as an effective jacket as well. Problems involving separation of insulation and jacket are eliminated by the onepiece, unitized, integral construction.

Mechanical Testing

It was found that a special plastic cable with an integral insulation and jacket, even in a small diameter design, would pass the Bureau of Mines damage tests readily with zero failures in 100 runovers. It proved it could take a number of runovers at the same spot before failure. At that time only one of the cables of conventional construction had qualified in this test through meeting the requirement of having no more than 10 failures in 100 runovers, so while the test was considered important it was not mandatory for qualification. Subsequent

field experience has shown that this damage test has considerable significance as to the safe service life that can be expected from a cable. In the last couple of years several of the conventional cables have also qualified in this test showing a general trend toward overall improvement in cable constructions.

It was felt that field trials were important to check the new plastic cable under actual operating conditions after qualification in the Bureau of Mines flame and damage tests, because cable of the new design contained a number of features that differed from those in the conventional cables.

In 1957 the new plastic cables in the small-diameter Type W design were put into service in trial installations in two relatively severe applications in low coal mines in southern West Virginia. The performance of these cables was closely observed by the mine operators and by the Bureau of Mines field inspectors. Over a 6-mo period they gave a good account of themselves so additional plastic cables were released for field use. While both laboratory and field tests can provide valuable information about the relative merits of various cable construction features, the real measure of performance is gained only through broad experience under a variety of typical operating conditions.

Shuttle-Car Application

Following the trial installations under Bureau of Mines observation in southern West Virginia, the Pittsburgh Coal Co. put into shuttle car service in one mine a number of the new plastic Type G cables developed by Plastic Wire and Cable Corp. These cables were put into a section where wet and particularly tough operating conditions had resulted in previous conventional cables averaging only 64 shifts of operation before replacement was required. With the conspicuous orange color of the new plastic cables it was easier to give them better attention and care which contributed toward achieving approximately 200 shifts service life with the first plastic cables indicating the potential service available in this type of cable. However, when the novelty wore off, and the plastic cables were subjected to more typical abuse, the overall improvement in service life was not as

great, although there still was a marked increase in service life and a worthwhile reduction in overall cable cost as compared to experience with conventional cables.

In the mine where plastic cables were used exclusively for replacement purposes throughout 1958 the coal production was 3,966 tons per 100 ft of replacement cable. The average for the two previous years was 2,951 tons per 100 ft of replacement cable showing an improvement of 34.4% in cable serviceability. However, it is expected that the service potential for plastic cables is somewhat greater because the above figures were based upon plastic replacements of conventional cable through most of 1958 and the operating conditions were somewhat more severe than over the previous years.

While saving in overall cable cost is an important consideration, the most vital consideration in cable operation is the coal-production downtime involved with cable failures. Extensive experience with the Type G cables have shown no short-circuit failures and have revealed a reduced frequency of faults from external damage. Consequently, production interruptions due to cable failures with the plastic cable have been reduced somewhat over that with conventional cables. Although the time required to make a temporary splice that will compare with the extended service life of the plastic cable is greater, the overall production time lost is substantially less with the plastic cables.

Splicing Plastic Cable

Temporary splices and molded repairs in plastic cables can be made in a similar manner to those in conventional cables. However, the use of vinyl plastic tapes and vinyl molded sections makes the repaired part of the cable non-combustible like the rest of the plastic cable and also less likely to recurrent failure at a splice due to mechanical causes or wet conditions. While the use of flame-retardant plastic materials in making repairs may cost a little more, the investment pays dividends in safer, more durable splices, provided the workmanship is adequate.

Probably the most important safety feature of the plastic cable is that none of its components will support combustion, whereas all too often a short-circuit are will ignite the insulation in conventional cables causing serious smoke hazards as well as fire hazards. Under no circumstances has there been any burning of a plastic mining cable which appears to be an effective solution to the cable fire problem.

The Pittsburgh Coal Co. has long been convinced that conservative engineering practices in the operation of mining cables and equipment pays off in very worthwhile dividends in safe service life and in effective reduction of production interruptions. The conductor size in mine cables is carefully chosen to insure that the cable will operate at reasonable temperatures which will insure getting the maximum out of its potential safe service life. It is considered that under no circumstances should a cable be run at temperatures hotter than can be held by a person's hand, which is in the neighborhood of 140 F (60 C).

Future Developments

Experience has revealed that some plastic cables vary considerably in performance features and service potential. While plastic mining cables of proper quality are apparently making a definite contribution toward greater safety and longer safe service life it is anticipated that current development programs will lead to still greater improvements over the next few years.

The increased service life potential of plastic cables has demonstrated that improved temporary splices are necessary to prevent recurrent faults at splices from becoming a major problem. There is a great opportunity for someone to develop simplified materials and methods for making quickly under operating conditions a temporary splice that will last as long as the extended life potential of the plastic cables.

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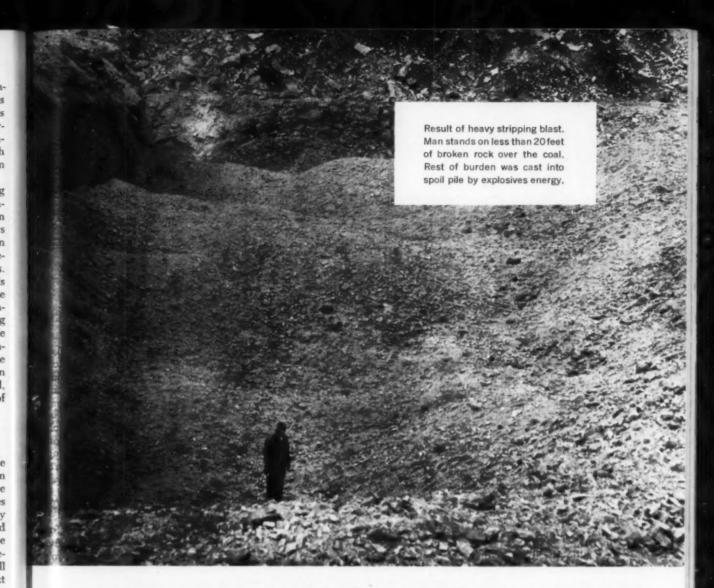
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With the recent advances in mining cable features and performance it is anticipated that further important improvements may be made in the next few years. However, the experience of the Pittsburgh Coal Co. has demonstrated that proper education regarding the handling of cables and sensible enforcement of safety rules can produce greater and more efficient coal production, lower operating costs and a better safety record with any cables.



AN OPEN LETTER TO THE COAL STRIPPING INDUSTRY

"Explosives are the cheapest labor you can hire."

Sometimes that's a hard statement to prove, but with the use of low cost blasting agents, it's making more sense every day.

Latest development is in northwest Pennsylvania where certain stripping operators are proving that, under their conditions, explosives energy is cheaper than mechanical energy in moving overburden to the spoil pile. Even though they are using $2\frac{1}{2}$ to 3 times the explosives normally fired, they are saving money . . . so much they wouldn't consider going back to older methods.

Formerly, they had used about 1 lb. of blasting agent to break 2½ to 3 cubic yards of rock. The formation was dislodged from the strata, then dug conventionally with the dragline sitting atop the shot bank.

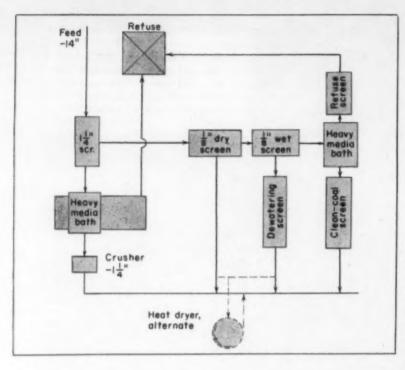
With the new method, the overburden is loaded so heavy—over 1 lb. of blasting agent per cubic yard of overburden—that up to 40% is blown across the pit to the spoil area. Remaining overburden is spread across the pit at ½ to ½ the height of the original bank. Following

the shot, a bulldozer smooths the top of the pile, and the dragline walks out on top of the shot material.

Although some had to see it to be convinced, all three operators agree they uncover 30% more coal in a given length of time . . . that overburden is broken much better, resulting in less down time for the dragline, and considerably longer cable life. Bulldozer time for reclamation is reduced 20%.

This is another example of how modern methods are helping cut costs. Let the Atlas representative in your area discuss this new technique with you to see if it can be applied to your conditions.





Designing for Low-Cost Coal Preparation

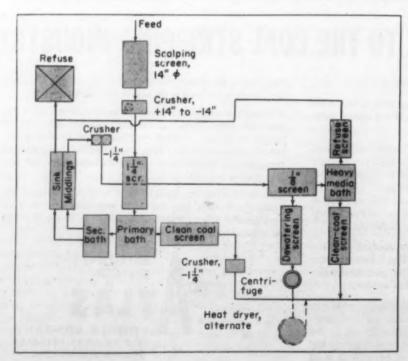


Fig. 1-THIS FLOWSHEET is for R-O-M coal normally not containing highash bands. See Table 1 for coal having characteristics suited to this type of plant.

Design innovations in coal-cleaning plants reflect changing requirements within the fuel market, particularly in the preparation of steam coals.

By Nelson L. Davis, President Nelson L. Davis Co., McHenry, Ill.

TEN OR FIFTEEN YEARS AGO the principal markets for coal in America were domestic fuel, railroad locomotive fuel, metallurgical coal, steam coal for general industry and steam coal for power-generating plants. Today the domestic-fuel market is much smaller while railroad-fuel production is almost nil. However, the remaining three markets have grown in importance, particularly in the field of power generation due to the steadily increasing demands for electrical energy. In America there is no evidence which indicates a cheaper fuel than coal for raising steam, and it seems definite that atomic energy is still far away from achieving the economies offered by coal in this field.

The greatest part of the remaining demand for domestic fuel is for mechanical stokers where a top size of 1% in is generally satisfactory while the bottom size may be anything down to % in. Therefore, the need for expensive and complicated sizing and mixing facilities is disappearing.

None of the remaining markets requires coal having a top size larger than 1¼ in, and there is virtually no demand that it be smaller.

Improvements in steam boilers, and the stokers, pulverizers and other units, have reduced the importance of such factors as, fusion point of ash, grindability index, fixed-carbon content and the amount of volatile matter. It is only in the metallurgical field that these and other characteristics of

Fig. 2—THESE CIRCUITS are for R-O-M coal normally containing high-ash bands. See Table III for coal having characteristics suited to this type of plant. coal have great importance. Therefore, this discussion will exclude the preparation of metallurgical coal and concentrate on plants directed mainly to the job of preparing steam coal.

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Power-Company Research

In their fuel-research work the power companies have worked toward a single objective, namely, the lowest possible fuel cost for raising steam. Their investigations have included:

 Characteristics of all coals available to them at lowest cost for transportation from mine to consuming point:

Cost comparisons of all such fuels in the various sizes readily available;

 Gradual perfecting of boilers and other combustion units to achieve maxium fuel economy from the most suitable available coals:

4. After selection of such suitable available coals has been made, then institute a program of fuel-economy tests to determine the value of ash and moisture reduction to the end that the net worth of the coal is established in terms of Btu per pound;

5. Once this level of progress is reached then all competing coals can be listed in terms of commercial acceptability on the basis of (a) Btu per pound, as received, and (b) Btu per pound, ash-free and moisture-free. (The first characteristic serves to check performance at the preparation plant while the second checks for variations in characteristics of the basic coal. In practice during the last year or two there have been evolved penalties for Btu deficiency, but there is no bonus for greater Btu value than the demanded minimum.

From the foregoing it is obvious that the target for each producer of fuel eligible to compete in the steamcoal market is to produce it at the lowest overall cost.

Today's Design Trends

The trend in modern designs for such preparation plants is in the direction of:

1. Precise control of clean-coal quality:

2. Minimum handling of the coal before cleaning to cause the least

TABLE I-Strip-Mined Central Illinois Coal¹

Size	Weight, per-	Float,	Percent of Total Feed	Percent of Total Yield	Ash, per- cent	Sur- face Moist- ure, per- cent	Total Moist- ure, per- cent	Btu per Lb, As Received	
6 x 4	20.00	89.4	17.88	19.80	4.88	0.18	12.18	12,012	14,500
4 x 11/4	40.00	95.4	38.16	42.24	4.90	0.94	12.94	11,913	14,500
11/4 x 1/4		94.3	9.43	10.44	4.99	3.00	15.00	11,601	14,500
3/4 x 1/4		91.1	9.11	10.08	5.16	6.43	18.43	11,079	14,500
1/4 x 1/8	6.00	76.4	4.46	4.94	5.20	2.20	14.20	11,687	14,500
1/8 x 48M	11.50	76.4	8.78	9.72	5.20	11.35	23.35	10,360	14,500
48M x 0	2.50	100.0	2.50	2.78	31.93	24.00	36.00	4,650	14,500
	100.00		90.32	100.00					

 1 Plus 1½ and 1½ x ½ are washed separately, both at 1.50 sp gr ½ x 48M washed separately in fine-coal plant and dried centrifugally.

TABLE II—Strip-Mined Central Illinois Coal²

Size	Weight, per-	, Float, per- cent	Per- cent of Total Feed	Percent of Total Yield	Ash, per- cent	Sur- face Moist- ure, per- cent	Total Moist- ure, per- cent	Btu per Lb, As Received	Btu per Lb Ash- and Moist- ure- Free
6 x 4	20.00	89.4	17.88	19.22	4.88	0.18	12.18	12,012	14,500
4 x 11/4	40.00	95.4	38.16	41.01	4.90	0.94	12.94	11,913	14,500
11/4 x 1/4	10.00	94.3	9.43	10.14	4.99	3.00	15.00	11,601	14,500
3/4 x 1/4		91.1	9.11	9.79	5.16	6.43	18.43	11,079	14,500
1/4 x 1/4	6.00	76.4	4.46	4.79	5.20	2.20	14.20	11,687	14,500
1/8 x 48M	11.50	100.0	11.50	12.36	18.47	3.00	15.00	9,647	14,500
48M x 0	2.50	100.0	2.50	2.69	31.93	3.00	15,00	7,695	14,500
	100.00		93.04	100.00					

 2 Same as in Table I except no washing of the $\frac{1}{8}$ x 0, instead it is heat dried to 3.00% surface moisture.

TABLE III—Deep-Mined Southern Illinois Coal³

Size	Weight,	Float, per- cent	Percent of Total Feed	Percent of Total Yield	Ash, per- cent	Sur- face Moist- ure, per- cent	Total Moist- ure, per- cent	Btu per Lb, As Received	Btu per Lb Ash- and Moist- ure- Free
Plus 6 In	9.92	68.62	6.80	8.18	6.89	0.04	10.04	12,045	14,500
6 x 3	18.15	77.18	13.95	16.78	7.04	0.18	10.18	12,003	14,500
3 x 2	12.82	82.86	10.42	12.54	6.87	0.94	10.94	11,917	14,500
2 x 1	19.90	87.21	17.36	20.88	6.92	2.37	12.37	11,703	14,500
1 x 1/4	21.11	88.80	18.74	22.53	7.05	6.43	16.43	11,095	14,500
1/4 x 1/8	8.16	81.60	6.67	8.02	6.80	2.20	12.20	11,745	14,500
1/8 x 48M	7.18	91.33	6.54	7.87	6.95	11.35	21.35	10,396	14,500
48M x 0	2.66	100.00	2.66	3.20	23.00	24.00	34.00	6,235	14,500
	100.00		83.14	100.00					

³ Plus 1 in cleaned by 2-stage heavy media © 1.37 and 1.80 sp gr, respectively. Then 1.37 x 1.80 middlings are crushed to minus 1-in and recycled with raw coal. Float and ash figures for the plus 1-in sizes include the coal recovered by retreatment.

TABLE IV-Deep-Mined Southern Illinois Coal*

Size	Weight per- cent	, Float, per- cent	Per- cent of Total Feed	Per- cent of Total Yield	Ash, per- cent	Sur- face Moist- ure, per- cent	Total Moist- ure, per- cent	Btu per Lb, As Received	Btu per Lb Ash- and Moist- ure- Free
Plus 6-in	9.92	68.62	6.80	8.12	6.89	0.04	10.04	12,045	14,500
6 x 3	18.15	77.18	13.95	16.65	7.04	0.18	10.18	12,003	14,500
3 x 2	12.82	82.86	10.42	12.44	6.87	0.94	10.94	11,917	14,500
2 x 1	19.90	87.21	17.36	20.72	6.92	- 2.37	12.37	11,703	14,500
1 x 1/4	21.11	88.80	18.74.	22.37	7.05	6.43	16.43	-11,095	14,500
1/4 x 1/8	8.16	81.60	6.67	7.96	6.80	2.20	12.20	11,745	14,500
1/8 x 48M	7.18	100.00	7.18	8.57	13.34	3.00	13.00	10,681	14,500
48M x 0	2.66	100.00	2.66	3.17	23.00	3.00	13.00	9,280	14,500
	100.00		83.78	100.00					

 4 Flow is the same as in Table III except $\frac{1}{18} \ge 0$ is not washed but heat dried to 3.00% surface moisture.

possible degradation, thereby reducing the capital cost of fine-coal cleaning and drying units and facilities for clarifying and recovering water needed for processing the coal;

Automation wherever it will reduce labor costs and permit better care of the machinery.

Design Possibilities

To illustrate these trends two simplified flow sheets are shown. One of these (Fig. 1) applies where the coal is relatively easy to clean since the problem is only to remove free impurities, such as rock, slate or pyrite. The other (Fig. 2) applies to coals which are characteristically laminated with and bonded to bands of objectionable impurities.

Note that both flow sheets have the following points in common:

 Heavy-media systems for precise separation of the plus 1¼-in and minus 1¼-in sizes;

2. The bottom size fed to the heavymedia unit is % in, but based upon removal of 95% of the minus %-in.

 Screen dewatering of untreated \u00e4x0 when removed by wet screening with optional centrifugal and thermal drying.

A final observation completing this discussion of trends is that it is frequently less costly to upgrade the thermal rating of ½x0 raw coal by cleaning down to ½ in in heavy media, and then heat-drying the minus ½-in, than to clean ½x0 by means other than heavy media followed by centrifugal drying only.

To illustrate this point, Tables I, II, III and IV have been developed. Tables I and II pertain to strip-mined central Illinois coal which characteristically is not laminated with impurities in the sizes larger than 1 in. The inherent moisture is approximately 10%. Tables I and II are alike except for the treatment of the 1/2x0 size fraction. As shown in Table I, the 1/2-in x 48-M is washed separately in a fine-coal plant and is then dried centrifugally. Table II shows the 1/2x0

removed by wet screening, deslimed at 48-M, screen dewatered and then heat dried to 3% surface moisture.

Tables III and IV have been developed from deep-mined coal in southern Illinois. This coal characteristically is laminated with impurities in the plus 1-in sizes. Here again, minus 1/8-in coal is cleaned and centrifugally dried (Table III), whereas Table IV shows the results when the minus 1/8-in coal remains uncleaned but screen dewatered and heat dried.

In all cases the treatment and disposition of the minus 48-M slimes must be established economically on the basis of its market value in comparison with the costs entailed by whatever cleaning, filtering and heat drying is necessary.

Coming in Coal Age: In May, the story of Peabody's new Tebo mine, by Al Flowers . . . In June, abstracts of all papers presented at the AMC Coal Show at Cleveland . . . In July, the 1959 Coal Age, Mining Guidebook and Buying Directory Issue.



NEW SCREEN BEARING OFFERS THE CAPACITY AND FATIGUE LIFE NEEDED TO BOOST VIBRATING SCREEN PRODUCTION

Designers and users of vibrating screens continually look for ways to increase operating capacity. Their requirements create a special bearing problem—because of the combi-

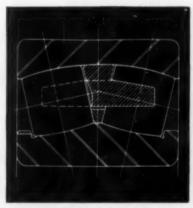


This is the new BKF screen bearing, now being produced in the fourteen most widely-used sizes.

nation of high loads and eccentric motion to which the bearings are subjected.

A new screen bearing, developed by BESF, solves the problem. This bearing has the long rollers and high capacity of the "C" type spherical roller bearing BESF introduced in 1953. It provides 40% greater load-carrying capacity and 3 times longer fatigue life than previous types. And its specially-designed cage withstands the high eccentric motion peculiar to vibrating screens.

This cage is made of centrifugally cast bronze and has axially drilled and reamed pockets of a shape closely conforming to that of the rollers. Its spherical OD conforms to the contour of the outer ring sphere. This provides greater cage contact area, thereby reducing the unit stresses. It also eliminates lub-



Drawing shows long rollers and close relative conformity of roller contour to ring contour in screen bearing design.

rication problems as the cage is supported in the outer ring's spherical surface where ample lubrication is available. This cage is symmetrical and one piece construction assures dynamic stability.

The new bearing is interchangeable with SEF 223 Series bearings used on screens in mines, quarries, steel mills, chemical and paper plants. For full details, send for Catalog No. 466. Write or call the nearest SEF distributor, sales office or SEF Industries, Inc., Philadelphia 32, Pa.

See it at the Coal Show, May 11-14, Booth 236





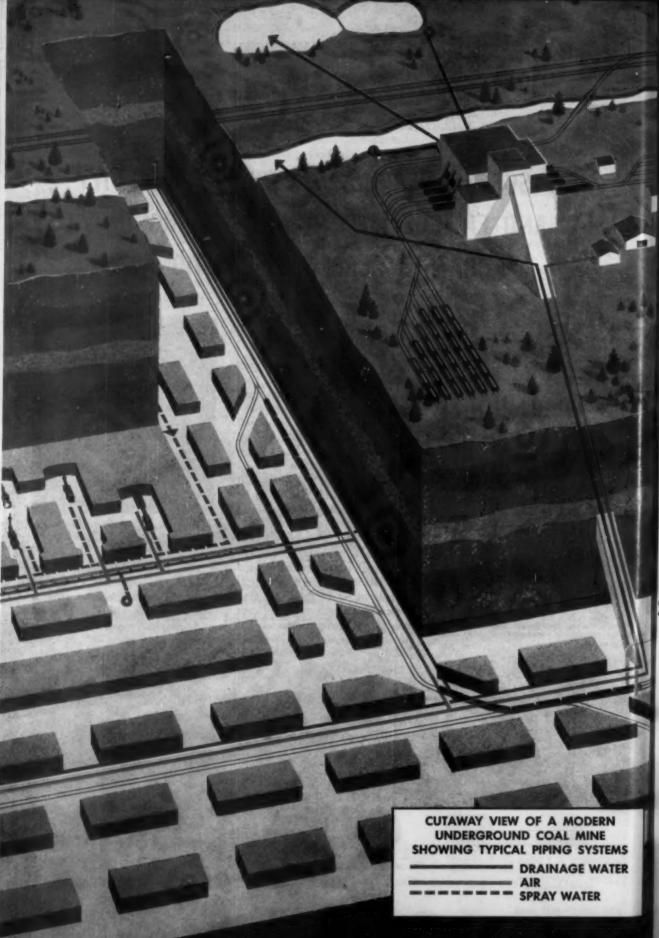




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Kaiser Aluminum mining pipe drastically reduces installation and handling costs underground!

Ideal for compressed air lines; spray water lines; mine drainage, filtration and disposal; fuel, steam and water supply lines.

With the emphasis on mine modernization, continuous mining and improved production methods, leading mine operators are finding that Kaiser Aluminum mining pipe meets their requirements as no other pipe can. Here's why:

- 1 Reduced Costs. Aluminum pipe drastically reduces installation costs underground because it's lightweight, easy to cut and fit (even in the overhead position), and requires a minimum of supports or hangers. And, if you use Schedule 5 aluminum pipe in your system, its initial cost is actually less than T&C Schedule 40 steel pipe.
- High Speed Installation. Quick connecting couplers and fittings assure the fastest pipe line service for air, spray water or drainage lines. Of particular importance in accelerated mining operations, down time waiting for air or spray water is minimized.

3 Strong, Durable. Kaiser Aluminum mining pipe is made of high strength aluminum alloys to take rough treatment and handling. It easily withstands normal pressures used in mining operations and resists the corrosive attack of mine atmosphere. It won't collapse under vacuum, won't become brittle when exposed to low temperatures.

The advantages of Kaiser Aluminum mining pipe make an important contribution to the coal industry's rapid rate of increased production efficiency. To get all the details on how this strong, lightweight pipe can improve your mining operations and save you money, contact us for the name of your nearest Kaiser Aluminum mining pipe distributor.

For complete information on pipe schedules, sizes, weights and strengths—mail in the coupon now for our free, illustrated booklet, "Kaiser Aluminum Mining and Construction Pipe." Kaiser Aluminum & Chemical Sales, Inc., General Sales Office, Palmolive Bldg., Chicago 11, Illinois.



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Preview . . .

1959

COAL SHOW

American Mining Congress Cleveland, Ohio May 11-14



New Opportunity for 1959 . . .

How to Get The Most Out of Your Coal-Show Visit

What You Should Have in Mind to Make Your Visit Pay Off How You Should Organize Your Time at the Show What You'll Find in Products and Papers



Raymond E. Salvati President, American Mining Congress



E. P. Humphrey Chairman, Program Committee



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April 1959 - COAL AGE

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COAL

WHAT WILL YOU FIND when you walk in the front door to attend this year's American Mining Congress Coal Convention and Exposition at the Public Auditorium in Cleveland May 11-14? In part it is this:

Seven figures worth of equipment and materials spread over more than 150,000 sq ft-over 3½ acres-of floor space inside and outside the auditorium.

Representatives of over 250 manufacturers and suppliers—including 15 to 20 new ones—anxious to help you with any problems or questions you may have.

A nine-session convention program with over 50 speakers to give you the latest on all phases of coal mining and preparation, including management and safety.

The prospect is not, of course, one to be frightened at. Coal men have been exposing themselves to this stimulating and valuable experience for many years with no qualms or ill effects. But perhaps it should give one pause to think—and perhaps seek the answers to these questions:

- 1. What do I want to accomplish? This is the No. 1 question because how you do at Cleveland will be the payoff not only on the time and money you spend to attend but in improved operation in the months to come.
- 2. How can I organize my time so that I can tap all the available sources of the information and data I need—convention papers and discussion, exhibits and exhibitors and, in addition, brother mining men? You have four days and a lot of territory to cover.



Your Coal Show Goals

You spend considerable of your time-and your company's fundsto go to the Coal Convention and

Keep in Mind . . .

In Face Work

- The possibilities in new higher-capacity machines miners, loaders, cutter, drills and so on.
- The possibilities of remotely controlled, or servo, mining units.
- New methods and equipment for increasing machine output, as, for exemple, improved shuttle cars, new or improved conveyors.
- Newly available miners and other equipment designed to bring the advantages of high-capacity machine mining to the thinner seams.
- Bit and chain designs for lower cost and higher output for cutters and miners.
- Mining and pillaring plans matched to the characteristics of the new mining and transportation units.
- The possibilities of highercapacity bolting equipment and the advantages of new anchoring facilities and tension indicators.
- New equipment for reducing the cost and effort and improving the results in such necessary auxiliary operations as supply-handling, rock-dusting and so on.
- How modern communication facilities can reduce face interruptions and promote efficiency in haulage and other operations.

In Power

- The possibilities of the use of AC in deep mining—in part or completely.
- The possibilities of higher primary voltages—6,000 for underground mines, for example—for better performance.
- New cable designs, including insulation and jacketing, for better performance and longer cable life.
- Features and advantages of new cable connectors, junction boxes, distribution centers and similar control and protective equipment for both AC and DC.
- How sectionalizing and ground-indicating and protective equipment can be used and what it provides in safety and operating advantages.
- What the new systems for remote starting and stopping of substations can do to conserve mannower.

In Haulage

- The cost-saving possibilities in big, modern cars and loco-motives.
- What automatic couplers, modern wheels, antifriction bearings and other auxiliaries can do to make modern car equipment more valuable.
- How belt systems can be set up and what they can do under various mining conditions to keep haulage cost in the low brackets.
- How such auxiliaries as dispatching, block signals, electric switch-throwers and other facilities, including track cleaners, can cut overall haulage costs.
- How car and trip movers and automatic loading stations can cut coal-transfer and haulage costs.
- What modern trackwork provides in operating and maintenance advantages.
- How such car-handling and dumping facilities as chain hauls, trip-makers and automatic dumps save in time and labor.
- The real savings possible by reducing travel time through modern man-trip facilities, including cars, man-belts and portals.

In Stripping

- The savings inherent in highercapacity new excavators in thicker overburden, or in lower-cost handling of normal-thickness material.
- The operating benefits in peak-knocking, ditching, dam-building, road construction and cleanup in front of strip shovels of tractors and scrapers, including the smaller wheeled models.
- The flexibility and other advantages of modern tools for tractors—bulldozers and the like.
- The versatility and time- and labor-saving features of tractor-mounted or full front-end loaders, including their adaptability to handling the entire coal-loading operation.
- The cost and capacity advantages of new overburden drills and blasting mediums, including special charging and tamping facilities.
- What modern high-capacity haulage units can save in original cost per ton of haulage capacity, operating labor and maintenance.

Exposition with the basic aim of obtaining ideas—for either equipment or methods—that will cut cost, enhance quality and promote safety. You may have certain specific goals in mind—for example, new material for brattice lines to deliver more air in continuous mining, or how to solve a fine-coal reclamation and dewatering problem.

Or you may be interested in checking all the available ideas—in convention papers, on the exhibit floors and in the craniums of your brother mining men—on face haulage underground or drilling in stripping, for example—to see if you can improve on what you are now using.

You already have certain things in mind even as you read this. But to make sure you cover all the bases a little formal review is suggested. To help you in this operation, Coal Age, on the basis of its constant and continual pulse-feeling across the country, offers you the accompanying "Keep in Mind" panels. These are provided to assist you in determining and scheduling the specific things you want to accomplish at Cleveland.



Organizing Your Time Check in Advance

What you do before, perhaps even more than what you do after you actually get to the convention, will have a major bearing on how effectively you organize to get the most from your stay in Cleveland. Ideally, the thing to do is to check all available information on what will be shown and discussed. To help you Coal Age offers you the following:

- The complete program for the convention (p 137).
- 2. A list of products and services

 —as complete as possible at press
 time—to be shown by the over 250
 manufacturers and suppliers who

will be on hand to help at Cleveland. This list starts on p 139, and is broken down into 31 product classifications beginning with "Continuous Miners" and ending with "Tires." Thus, in one place, you can quickly check the majority of the equipment, materials and services offered for your consideration. It is designed to help you plan and also help insure that you will not overlook anything.

3. A featured-products section. beginning on p 148. It is designed to give you the salient details on most of the new and featured items in the Coal Show. Again this section is designed to help you in planning and also help insure that you will not overlook a new piece of equipment, a product or a service that would be of real benefit to you. The Coal Show brings together in one place the biggest array of new products anywhere. Use this section to help yourself get the most from it.

Advertisements Too—Not to be missed in your pre-show check are the advertisements of the manufacturers and suppliers in this issue. They, too, are designed to help you

Keep in Mind . . .

In Pumping and Drainage

The a				
to reduce				
also the pe	ossibiliti	es of	such b	оге-
holes for discharge	-		-	
heads.				

- ☐ What neutralizers can do in preventing acid discharge in strip mining.
- How such new ideas as rigid plastic pipe, thin-wall metal tubing and quick-action couplers can ease the cost of pipe and its laying.
- How automatic controls can save on pump attendants.

In Preparation

- Raw- and prepared-coal storage and blending methods and equipment.
- New ideas and equipment for increasing the accuracy and efficiency of the cleaning operation.
- Ways and means of insuring full recovery of coal values by such means as rewash units, middlings retreatment, etc.
- The economics of fine-coal reclamation and cleaning and available methods and equipment, including tables, flotation units, cyclones, fine-coal jigs, and so on.

- Coal-drying circuits and equipment, mechanical and thermal.
- Freezeproofing and dustproofing equipment and materials.
- Water-clarification circuits and equipment, including classifiers, thickeners and filters.
- New ideas and equipment for more-efficient coal screening, especially in the very-fine and ultrafine ranges.
- Testing and preparation-control equipment and materials.
- Equipment and methods for achieving the maximum in automatic plant operation and coalloading to save on manpower.
- How plants can be designed or revised to lengthen life of components and make repair and replacement easier.

In Ventilation

- How ventilating systems may be surveyed and studied to revise them for higher efficiency.
- The benefits of efficient fans, properly installed and operated, in reducing power cost for ventilation.
- How up-to-date methods and materials for coursing air can reduce losses drastically, with corresponding power savings.
- How blowers, tubing, plastic brattice and other new developments can assist in solving faceventilation problems with continuous miners.
- How signals and systems for remote starting and stopping of outlying fans can promote safety and conserve manpower.

The 1959 Coal Show Program

Monday, 10:00 AM, May 11

Continuous Mining

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AGE

Developments in Face Ventilation and Dust Control John B. Kebblish, Montaineer Coal Co.

Roof Control for Continuous Mining Equipment

James T. Jones, Mather Collieries
Continuous Haulage, Face to Main

Line
Bruce E. Duke, Bethlehem Mines
Corp.

Tuesday, 10:00 AM, May 12

Underground Power

Are AC Sections Practical in DC Mines?

Jemes Wiley, Rochester & Pittsburgh Coal Co.; discussion by

Why We Decided to Open a New Mine With AC Power L. E. Briscoe, Ayrshire Collieries Corp.

Experience With High-Voltage Distribution Systems Underground John W. Looney, Pocahontas Fuel Co.

Advantages of Higher Utilization Voltages Underground

Representative of AMC Committee on Underground Power. Mine Fires, Pittsburgh Seam, Northern West Virginia

William O. Barnard Jr., Christopher Coal Co.

Fire-Resistant Hydraulic Fluids for Coal Mines A. S. Morrow, Shell Oil Co.

Safety Problems Involved in Strip Mining E. E. Quenon, Peabody Coal Co.

Much Can be Done to Improve Coal-Mine Safety

Dennis J. Keenan, Sterling Coal Co.

Wednesday, 2:00 PM, May 13

Coal Preparation

Centrifuging Stoker Coal
E. A. Watters Jr., Joanne Coal Co.

Heavy-Medium Cyclones
Dr. C. Krijgsman, The Dutch State
Mines

Froth Flotation - A Tool for Increased Profits

W. L. McMorris Jr., U. S. Steel Corp.

Electrical Side of Preparation-Plant Design D. E. Hamilton, General Electric Co.

Dust Collection in Preparation Plants Henry F. Hebley, consultant, Pittsburgh, Pa. Continuous-Mining-Equipment Maintenance

Wm. Laird, Eastern Gas & Fuel Associates

Preventive Maintenance Walter Crace, Princess Coals, Inc.

Overhauling Mining Equipment W. R. Wood and P. C. Stull, The Berwind-White Coal Mining Co.

Thursday, 10:00 AM, May 14

Strip Mining

Economic Aspects of Large Stripping
Shovels
L. P. McDaugll, Pachady Coal Co.

J. P. McDowell, Peabody Coal Co.

Economic Aspects of Large Stripping Draglines Lafe Stewart, The Maumee Collieries

Lafe Stewart, The Maumee Collieries Co.

Machine-Loading Blast Holes With Ammonium Nitrate D. S. Blount, Raleigh Eagle Coal Co.

Power Distribution in Strip Mines at 7,200 Volts

Robert V. Bovenizer, Hanna Coal Co.

Future Trends in Strip-Mine Haulage Equipment

T. G. Gerow, Consulting Mining Engineer

Tuesday, 10:00 AM, May 12

Strip Mining

Multiple-Seam Stripping
Q. E. May, Pittsburg & Midway Coal
Mining Co.

Recent Applications of Wire-Line Coring Techniques in Coal Exploration M. J. Gleason, E. J. Longyear Co.

Highwall Augering
John R. Kamap, Elm Development Co.

Use of Continuous-Mining Equipment in Highwalls J. C. Forrest Jr., Harcliff Coal Co.

Remote Control in Highwall Mining John W. Heimaster, Union Carbide Chemicals Co. Wednesday, 2:00 PM, May 13

Management and Cost Control

Positive Application of Industrial Engineering to Coal Mining I. J. Prelaz, Coal Standards, Inc.

Using IBM Methods to Reduce Supply Costs E. P. Bucklen, Pocahontas Fuel Co.

An Industrial Engineer Looks at Cost Controls Earl L. Petersen, Paul Weir Co.

Selection of Supervisors H. M. Tibbs, Truax-Traer Coal Co.

Training Programs for Operators of New Equipment

Walter H. Flemming, Tennessee Coal & Iron Div., U. S. Steel Corp. Thursday, 2:00 PM, May 14

Thin-Seam Mining

Continuous Mining in Thin Seams Andrew B. Crichton Jr., Crichton Coal & Coke Co.

Conventional Mining in Thin Seams
James Carter, Osborne Mining Co.;
discussion by Myron Kok, The
Warner Collieries Co.

Roof Control in Thin Seams Stonie Barker, Island Creek Coal Co.

Underground Augering Under Difficult Seam Conditions
Tom N. Shattuck, Wind Rock Coal & Coke Co.

Special Features

Coal Miners Party, Wednesday, May 13.

Dinner and entertainment at Carter,
Statler and Sheraton-Cleveland Hotels.

Ladies' Events: Style luncheon, Monday, May 11, Halle Bros. department store. Westwood Country Club Luncheon, Tuesday, May 12.

Tuesday, 2:00 PM, May 12

Safety

A Continuous Methane-Monitoring System at the Working Face R. S. James, U. S. Bureau of Mines Thursday, 10:00 AM, May 14

Equipment Maintenance

Training Maintenance Personnel
A. R. Hood, Duquesne Light Co.; discussion by C. B. Fulmer, Stonega Coke & Coal Co.

make the most of your investment in time and money. Be sure to check them all.

Make a List

The product of your thinking on your needs and your check on what will be offered at the convention and exposition should be a list of specific things to see, sessions to attend and people to get together with. Then you can schedule your time to make your visit pay off to the fullest, including special sessions with brother operators, perhaps set up in advance. Ideally, your list should include these specific items:

- The convention sessions you want to attend-times and subjects.
- 2. The specific products and manufacturers you want to make sure to check. Perhaps you will want to make specific dates in advance to make sure you can get what you need.
- The names of other mining men you want to visit with in person—and the topics you want to discuss with them. As noted, advance arrangements for dates will insure your gettogethers.



Work Your Plan

All parties involved in the convention and exposition—the exhibitors and the American Mining Congress and its various divisions—want you to profit to the utmost. One highly-practical device to facilitate this is the program. Among the helps it affords are these:

- 1. A calendar of events showing day-by-day what is going on.
- 2. A day-by-day schedule of convention sessions, with topics, papers and authors.
- A floor plan for the exhibits showing booth numbers for quick location.

- The names, addresses and booth numbers of the exhibitors, arranged alphabetically to facilitate location.
- 5. An alphabetical list of the product and services groups by manufacturers, covering over 70 such groups from "Auger-Mining Equipment" to "Wood Preservatives."

Sit down with your list of things to do and study your program. Then you can make up a schedule that will insure covering everything.

Perhaps you will come up with a tight schedule. Even if you do, you should squeeze out enough time for a look at everything in the hall. You never know where you can get an idea, and if you do look you certainly increase your chances markedly.

Show-Going Roundup

So... this is the recipe for getting the most out of the 1959 Coal Convention and Exposition of the American Mining Congress:

- Sit down and think about what you need and want in ideas. To help you in this, Coal Age offers the accompanying "Keep in Mind" panels.
- Check in advance on what the convention and exposition will offer.
 To facilitate this Coal Age brings you in this section the

A. The convention program (p 137).

- B. A list of products and services to be shown (p 139),
- C. Descriptions of most of the new and featured products (p 148). Plus the special information in the advertisements in this issue.
- Make arrangements in advance for special meetings with manufacturers and brother operating men.
- Use your program to schedule your activities.

Allow enough time for general browsing through all the exhibits to make sure no idea is overlooked.

And for Better Mileage With Less Strain—Select your footgear with care and take a seat once in a while. The arches will bear up with less protest.

Keep in Mind . . .

In Maintenance

- How approach, organization, methods and records can help attain the maximum in results.
- The importance of preventive steps in reducing breakdowns, keeping production up, and keeping repair cost (labor and materials) down.
- The money and time-saving advantages of good tools and facilities.
- The value of good lubricants and good lubricating facilities, including automatic systems.
- The advantages of modern bearings from the lubricating and operating standpoints.
- The benefits of materials and methods designed to combat wear and corrosion.
- The savings possibilities of modern electrical insulations.
- The advantages in maintenance of new types of such components as motors, controls, tires, conveyor belting and so on.

In Supply Handling

- Protection against contamination and loss through pilfering, weather and carelessness by proper houses, sheds, racks, bins and lockers.
- Control of inventory level and receipt and issuance by proper record systems.
- Conservation of manpower by the use of cranes (motor, overhead, etc.) and other equipment for handling heavy materials, and of special facilities for delivery to the working areas.

In Safety

- The added advantages of modern supports and methods in reducing roof-fall injuries and fatilities.
- What new and improved equipment can do to reduce the dust hazard in mining and related operations, including bolting.
- How remote indicators and alarms can furnish added protection against gas buildups.
- How protective clothing and equipment, including self-rescuers, can prevent injuries and fatalities.
- What modern firefighting facilities can offer in added protection.

1959 Coal Show Exhibits...

Equipment . . . Materials . . . Service

This checklist of what manufacturers will show at Cleveland next month gives you a complete roundup of products and services. The entries are grouped according to major mining applications to help you locate products in which you are particularly interested.

New products to be shown at the forthcoming Coal Show are highlighted in the panel on the next two pages.

Loading Machines

- Goodman Mfg. Co., Chicago 9, Ill.
 Low-vein loading machine.
- Jeffrey Mfg. Co., Columbus 16,
 Ohio-Types 81-C, 97-B, 81-AH loading machines.
- Joy Mfg. Co., Pittsburgh 23, Pa.—
 15-BU loading machine.
- Long Co., Oak Hill, W. Va.—80hp loading machine for AC applications. Myers-Whaley Co., Knoxville 1, Tenn.—Low, oscillating-shovel-type loader.

Continuous Miners, Bits and Accessories

- Allegheny Ludlum Steel Corp., Pittsburgh 22, Pa.—Carmet Type JR carbide mining tools.
- Austin Powder Co., Cleveland, Ohio—Two new cutter bits, AP-10 and AP-10D.
- Bowdil Co., Canton 7, Ohio-Multiple cutter bar ripper head.
- Cincinnati Mine Machinery Co., Cincinnati 25, Ohio—Bit lug and carbide bit for continuous miners.
- Goodman Mfg. Co., Chicago 9, Ill.
 Type 300 continuous borer, Type 425 continuous borer, Wilcox mining machine.
- Jeffrey Mfg. Co., Columbus 16, Ohio-New Model 86A Colmol, 25½ in high.
- Joy Mfg. Co., Pittsburgh 22, Pa. -Joy 6-CM miner, 2BT-2 Twin Borer.
- Kennametal, Inc., Bedford, Pa. carbide-tipped bits, including tow strongshank types.
- Lee-Norse Co., Charleroi, Pa.—New models of low-seam Miners.

McLaughlin Mfg. Co., Inc., Joliet,



Advertising Too

In addition to the complete listings in this section and the fuller description of new and featured products in the section beginning on page 149, many of the exhibitors at Cleveland are represented by advertisements in this issue. They provide pertinent additional details and thus merit your careful study.

"Bullets," or black dots (•) in the accompanying breakdown of products to be exhibited show that these companies have advertisements in this issue, many of them marked by the "See Our Booth" symbol. To locate an advertisement, turn to Advertisers Index at the back of this issue.

Ill.-Mining tools, auger heads, carbide bits, augers and accessories.

Metallurgical Products Dept., General Electric Co., Detroit, Mich.—Carboloy bits with great cross-sectional area in the shanks.

- Mining Progress, Inc., Highland Mills, N.Y.-Westfalia Lunen Lobbe Hobel, or coal planer.
- National Mine Service Co., Indiana,
 Pa.—Marietta Miner.
- Vascoloy-Ramet Corp., Waukegan, Ill.—Complete line of cemented-carbide coal mining tools.

Stripping

- American Brattice Cloth Corp., Warsaw, Ind.—Bags for explosives packaging.
- American Cyanamid Co., New York
 N.Y.-Blasting caps, permissables
 and blasting agent.
- Atlas Powder Co., Wilmington, Del.
 Blow charging machine for charging horizontal blastholes, ammonium nitrate blasting agent, Giant "75" primers and blasting accessories.
- Baldwin Lima Hamilton Corp., Construction Equipment Div., Lima, Ohio-Lima Equipment for coal stripping and loading, including shovels and draglines.
- Bemis Bro. Bag Co., St. Louis, Mo.

 -Flexiply paper and polyethylene bag for explosives.
- Bucyrus-Erie Co., S. Milwaukee, Wis.—New 30-R rotary blast hole drill and Bucyrus-Erie shovels.

Central Mine Equipment Co., St. Louis 15, Mo.—Coalmaster augers, bits and accessories for blasthole drilling.

Clark Equipment Co., Construction Machinery Div., Benton Harbor, Mich.— Michigan Model 280 bulldozer and a 365-hp Model 375A tractor.

Davey Compressor Co., Kent, Ohio-New tractor-mounted overburden drills.

Geodimeter Co., New York, N.Y.— Instrument for measuring distances electronically.

• E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.-Blasting supplies and accessories.

Electric Steel Foundry Co., Portland 10, Ore.—New 7-yd Esco tapered dragline bucket and new 11/4-yd Model WCW dipper.

• Harnischfeger Corp., Milwaukee 46, (Continued on p 141)

New Products Scheduledfor Display

For your convenience the new products that will be shown at Cleveland, as reported by exhibitors, are listed in the following tabulation. Where detailed descriptions have been provided by the exhibitors they appear in the featured products section beginning on p 148. A star (*) preceding the listing in this panel indicates this fact.

Deep Mining

- *Multiple shooting with Airdox system. Airdox Cardox Products Co., Chicago, Ill.
- Roof-bolting equipment. Airdox Cardox Products Co., Chi-
- *AP-10 and AP-10D cutter bits. Austin Powder Co., Cleveland, Ohio.
- *Flexible ventilation tubing. Bemis Bro. Bag Co., St. Louis, Mo.
 - Torque-arm conveyor drives. Barber-Greene Co., Aurora, Ill.
- * Adjustable ripper head. Bowdil Co., Canton, Ohio.
- *Carboloy cemented-carbide mining tools. Metallurgical Products Dept., General Electric Co., Detroit, Mich. Heavy-duty belt-conveyor drives, Barber-Greene Co.,
- Aurora, Ill.

 *Belt conveyor feeder. Columbus McKinnon Chain Corp.,
- Tonawanda, N. Y.
- *Underground auger. Compton, Inc., Clarksburg, W. Va. *Longwall roof support. Dowty Mining Equipment, Ltd., Ashchurch, England.
- *Magnetic trolley contactor. General Equipment & Mfg. Co., Louisville, Ky.
- *Types 300 and 425 boring-type miners. Goodman Mfg. Co., Chicago, Ill.
 - *Crawler-mounted loader, Goodman Mfg. Co.
 - *Type 870-20 shuttle car. Goodman Mfg. Co.
 - *Universal cutter, Type 2430. Goodman Mfg. Co.
 - *Improved Ropebelt conveyor. Goodman Mfg. Co.
- *Rope-supported mine conveyor, Hewitt-Robbins, Inc., Stamford, Conn.
- *Low Colmol, Model 86A. Jeffrey Mfg. Co., Columbus, Ohio.
- *Rope-frame belt with "live" belt reserve. Joy Mfg. Co., Pittsburgh, Pa.
- "Lectronic Sentry" for underground-power system. Joy Mfg., Pittsburgh. Pa.
 - *24-in-high loader and 27-in-high shuttle car. Joy Mfg. Co.
 - *CD-43 coal drill and 15-BU loader. Joy Mfg. Co.
 - *Twin-Borer for 8-ft coal. Joy Mfg. Co.
 - *AC or DC, 6-CM ripper-type miner, Joy Mfg, Co.
 - *Strong-shank cutter bits. Kennametal, Inc., Bedford, Pa.
 - *Model CM37X Miner. Lee-Norse Co., Charleroi, Pa.
 - *Continuous machine for 30-in coal. Lee-Norse Co.
 - *Low, low personnel carrier. Lee-Norse Co.
 - *Articulated conveyor. The Long Co., Oak Hill, W. Va.
 - *80-hp AC loading machine. The Long Co.
- *Model 80 slurry rockduster. Mine Safety Appliances Co., Pittsburgh, Pa.
- *Low, shovel-type loader. Myers-Whaley Co., Knoxville, Tenn.
- *Wheat electric cap lamp. National Mine Service Co., Pittsburgh, Pa.
 - *Type 26 Torkar. National Mine Service Co.
- *Automatic loading point. The Nolan Co., Bowerston, Ohio.
 - *Hydraulic carspetter. The Nolan Co.

- *Trip holder. The Nolan Co.
- *Resin-sealing process for roof bolting, Pattin Mfg. Co., Marietta, Ohio.
- *Flexible-edge belting. Thermoid Div., H. K. Porter Co., Inc., Trenton, N. J.
- *Roof-bolt self-centering head. Republic Steel Corp., Cleveland, Ohio.
- *Spotter for bottom-dump cars. Sanford-Day Iron Works, Inc., Knoxville, Tenn.
- *Bantam Bolter, 23 in high. Schroeder Bros. Corp., McKees Books, Pa.
- *Automatic tilt pan. W. R. Stamler Corp., Paris, Ky.
- *Trip-post jack. Templeton, Kenly & Co., Broadview, Ill.

Stripping

- *"Jetloder" blow-charging machine. Atlas Powder Co., Wilmington, Del.
- *Explosives packing bags. Bemis Bro. Bag Co., St. Louis,
- *"30-R" overburden drill. Bucyrus-Erie Co., S. Milwaukee,
 - *Series HD-8 bulldozers, Caterpillar Tractor Co., Peoria, Ill.
 - *Biggest Cat grader. Caterpillar Tractor Co.
- *Tractor-mounted overburden drills. Davey Compressor Co., Kent, Ohio.
- *TC-12 Twin crawler tractor. Euclid Div., General Motors Corp., Cleveland, Ohio.
- *Nitro-carbo-nitrate blasting agent. Hercules Powder Co., Wilmington, Del.
- *70-ton coal hauler. KW-Dart Truck Co., Kansas City, Mo.
- *Off-the-highway, high-capacity haulers. LeTourneau-Westinghouse Co., Peoria, Ill.
- *"Wire-Line" core barrels. E. J. Longyear Co., Minneapolis,
- *38-yd coal truck. Mack Trucks, Inc., Plainfield, N. J.
- *Slings and swaged rope assemblies. Macwhyte Co., Kenosha, Wis.
- "Vicon" excavator, 6 or 7 yd. Manitowoc Engineering Corp., Manitowoc, Wis.
 - *Model OC-96 front-end loader. Oliver Corp., Chicago, Ill.
 - *Model OC-4 overhung tractor. Oliver Corp.

Preparation

- *Air springs for screens. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
- *Rod screens for dewatering. Bixby-Zimmer Engineering Co., Galesburg, Ill.
- *"Minicage" preparation plant elevator. Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
- *Centrifugal screen. Cross Perforated Metals Plant, National Standard Co., Carbondale, Pa.
- *Underflow control for hydraulic classifier. Dorr-Oliver, Inc., Stamford, Conn.
- *"Cascade" screens. Hendrick Mfg. Co., Carbondale, Pa.
- *H & P Seive-Bend stationary screen. Heyl & Patterson, Inc., Pittsburgh, Pa.
- *Fluid-bed dryer. Heyl & Patterson, Inc., Pittsburgh, Pa. *Accuray density measurment. Industrial Nucleonics Corp., Columbus, Ohio.
- *Aerial tramways. Interstate Equipment Corp., Elizabeth, N. I.
- *Automatic analyzer. Laboratory Equipment Corp., St. Joseph, Mich.

At the 1959 AMC Coal Show

*Vibration inducer for material flow. Martin Engineering Co., Neponset, Ill.

*"Cradle Idler" for rope-frame belts. McNally-Pittsburg Mfg. Corp., Pittsburg, Kan.

*Rotary car dump. The Nolan Co., Bowerston, Ohio.

*Rod-deck vibrating screen. Nordberg Mfg. Co., Milwaukee,

*Heavy-duty FD-4 feeder. Pettibone National Iron Co.,

*Heavy-medium cyclones. Roberts & Schaefer Co., Chicago, Ill.

*Vibrating-screen bearings. SKF Industries, Philadelphia 32,

*Permanent magnet for tramp iron. Stearns Magnetic Products, Valparaiso, Ind.

*"Taper-Slot" screens. Wedge Wire Corp., Wellington,

Maintenance and Supplies

- *Push-pull hydraulic couplings. Aeroquip Corp., Jackson, Mich.
- *Silicone insulation for open-type motors. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

*Rubber-lined pump. Allis-Chalmers.

* Speed changers and reducers. Allis-Chalmers.

*VHS (very high strength) wire rope. American Chain & Cable Co., Bridgeport 2, Conn.

*Metal-removal tools. Arcair Co., Lancaster, Ohio.

- *Lifetime-lubricated rollers. Caterpillar Tractor Co., Peoria, III.
- *"Double-Gray" high strength wire rope. Wickwire Spencer Steel Div., Colorado Fuel& Iron Corp.,

*V-belt drives. Dodge Mfg. Corp., Mishawaka, Ind.

- *Industrial batteries and chargers. Exide Industrial Div., Electric Storage Battery Co., Philadelphia, Pa.
- *Trolley-switch contactor. General Equipment & Mfg. Co., Louisville, Ky.
- *Repair systems for belts and pulleys. General Splice Corp., S. Norwalk. Conn.
 - *Electronic "stadia" rod. Geodimeter Co., New York, N. Y.
 - *Fire hose. Goodyear Tire & Rubber Co., Akron, Ohio.

- *"Siliconic" battery plates. Gould National Batteries, Inc., Trenton, N. J.
 - *Heavy-duty lubricant. Gulf Oil Corp., Pittsburgh, Pa.
 - *Thread-repair kits. Heli-Coil Corp., Danbury, Conn.
- *"Weld-On" sprocket rims. Kensington Steel Div., Poor & Co., Chicago, Ill.
- *Grouser plates. Kensington Steel Div., Poor & Co.
- *Automatic lubrication. Lincoln Engineering Co., St. Louis, Mo.
- *Dolphin floating suction strainer. Megator Pumps & Compressors, Inc., Pittsburgh, Pa.
- *Rubber cushions for mine cars. National Malleable & Steel Castings Co., Cleveland, Ohio.
- *Lightning arresters, capacitors. Ohio Brass Co., Mansfield,
- *High-voltage cable coupler. PLM Products, Inc., Cleveland, Ohio.
- **★Cables in plastic jackets.** Plastic Wire & Cable Co., Jewett City, Conn.
- *Multi-belt drive. Manhattan, Rubber Div., Raybestos-Manhattan, Inc., Passaic, N. J.
- *Super VS drive, explosionproof and open frame motors.
 Reliance Electric & Engineering Co., Cleveland, Ohio.
- *Suspenders for conductors. Electrical Wire Div., John A. Roebling's Sons Corp., Trenton, N. J.
 - *Herringbone wire rope. John A. Roebling's Sons Corp.
- *Lightweight metallic cable sheath. Simplex Wire & Cable Co., Cambridge 39, Mass.
- *Vibrating-screen bearings. SKF Industries, Inc., Philadelphia 32, Pa.
- *Simplified expansion shells. Thompson Products, Inc. (Distributed by National Mine Service Co., Pittsburgh, Pa.)
- *Multi-point lubrication. Trabon Engineering Corp., Solon, Ohio.
 - *Solid rubber tires. United States Rubber Co., New York.
- *Couplings for plain-end pipe. Victaulic Co. of America, Elizabeth, N. J.
- *Silicon mine-type rectifier, Westinghouse Electric Corp., Pittsburgh, Pa.
 - *Air-line assemblies. Weatherhead Co., Ft. Wayne, Ind.
 - *Skiving and cutting machine. Weatherhead Co.
- *Renewals for mine chain. Whitney Chain Co., Hartford 2, Conn.

Wis.-Magnetorque and electronic control units for excavators.

- Hendrix Mfg. Co., Mansfield, La.— Hendrix dragline buckets including Type MH heavy duty.
- Hercules Powder Co., Wilmington,'
 Del.-Dynatex, a ready-to-use blasting agent of the nitro-carbo-nitrate type
- International Harvester Co., Chicago 1, Ill.—27 cu yd Payscraper; 375-hp engine; TD24 crawler tractor with Rish coal blade; TD15 Drott 4-in-1, and TD20 with Bullgrader.

• Joy Mfg. Co., Pittsburgh 22, Pa.— Joy 225 Blastair rotary drill.

Kochring Co., Milwaukee 16, Wis.-Model 405 power shovel.

E. J. Longyear Co., Minneapolis 2, Minn.—Wire Line core barrel for small diameter drill holes.

• Manitowoc Engineering Corp.,

Manitowoc, Wis.-Vicon excavator for dragline or shovel use; new shovel con-

Marion Power Shovel Co., Marion, Ohio—Stripping and loading shovels and draglines featuring Type 5760 shovels with capacities of 60 to 75 cu yd, and Type 151M, a 7-yd loading shovel.

Monsanto Chemical Co., St. Louis 24, Mo.-Prilled ammonium nitrate blasting agent.

Olin Mathieson Chemical Corp., East Alton, Ill.—Dynamites and blasting caps.

Spencer Chemical Co., Kansas City 5, Mo.—Spencer N-IV ammonium nitrate for blasting agents, packaging of N-IV and a machine for pneumatic loading of horizontal holes.

Varel Mfg. Co., Dallas, Texas-Rotary rock bits in fluid- and air-blast models.

Auger Mining

- Compton, Inc., Clarksburg, W. Va.
 A 25-in high auger for underground mining and highwall augers.
- Salem Tool Co., Salem, Ohio-McCarthy coal recovery drills, horizontal and vertical blasthole drills and Salem underground coal augers.

Coal Preparation

• Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.—Air springs for vibrating screens, and Allis-Chalmers solids-handling pump.

American Air Filter Co., Louisville 8, Ky. – Complete line of dust control equipment, including wet and dry type collectors.

American Cyanamid Co., New York

Coal Show Exhibits

 N.Y.—Aerospray 52 Binder, flocculants and other chemicals for preparation.

Armco Drainage & Metal Products, Inc., Middletown, Ohio-Bins, conveyor covers, structures.

Ashland Oil & Refining Co., Ashland, Ky.-Permatreating System for spray oil.

Barber-Greene Co., Aurors, Ill.—
"Duo-Screen" developed in Germany
for excessively wet or sticky materials.

Barrett, Haentjens & Co., Hazleton, Pa.-Slurry pumps.

 Bird Machine Co., South Walpole, Mass.—Bird-Humboldt centrifuge, Bird filters.

Bixby-Zimmer Engineering Co., Galesburg, Ill.—All types of Bee-Zee screens including new Twist Rod types.

Buttner Works, Inc., New York 17, N.Y.-Flash drying equipment.

Centrifugal and Mechanical Industries, Inc., St. Louis 18, Mo.—C-M-I continuous centrifugal dryers.

 Combustion Engineering, Inc., Raymond Div., Chicago 22, Ill.—C-E Raymond flash drying system for fine coal.

Commercial Testing & Engineering Co., Chicago 1, Ill.—Sampling and analyzing services.

 Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.—Preparation plant elevator for personnel and supplies.

 The Deister Concentrator Co., Inc., Fort Wayne, Ind.—Concenco distributors and the new Concenco all-rubber riffled cover for replacement of decks on coal washing tables. Also single- and twindeck washing tables.

Derrick Mfg. Co., Buffalo 25, N.Y.-Vibrating screens for production and laboratory.

Dorr-Oliver Inc., Stamford, Conn.
 Dorreo FluoSolids coal drying system, filters, bowl desilters, and the DorrClone cyclone classifier with Siphontrol automatic underflow control.

Eimco Corp., Salt Lake City 10, Utah

Agidisc filters; slurry pumps, thickeners
and other preparation equipment.

- Fairmont Machinery Co., Fairmont,
 W. Va.—Tailor Steam Flo Dryer, a new concept in thermal drying, and Easy-Flo bin device.
- Fuel Process Co., South Charleston,
 W. Va.—New heavy media coal washer.
 Gorman-Rupp Co., Mansfield, Ohio—Pumps with solids handling characteristics.

Goyne Pump Co., Ashland, Pa.—Slurry pumps.

 T. J. Gundlach Machine Co., Div. of J. M. J. Industries, Inc., Belleville, Ill.— Two-stage, double, adjustable crusher.

Hammermills, Inc., Div. of Pettibone Mulliken Corp., Cedar Rapids, Iowa-Types of hammermills. Hendrick Mfg. Co., Carbondale, Pa.
 Cascade screen, wedge wire and wedge slot screens, and perforated screen of all types.

Heyl & Patterson, Inc., Pittsburgh
 Pa.—H&P fluid-bed dryer, H&P sieve bend and Reineveld centrifugal dryer.

Hoyt Wire Cloth Co., Lancaster, Pa.— Standard and special weaves of wire cloth for scalping, sizing and dewatering.

Industrial Nucleonics Corp., Columbus 12, Ohio—AccuRay system for continuous density measurement and binlevel control.

• Jeffrey Mfg. Co., Columbus 16, Ohio-Vibrating feeders, double-roll crusher, magnetic separator.

 Joy Mfg. Co., Pittsburgh 22, Pa.— Joy-Hazemag impact crusher.

Keenan Oil Co., Cincinnati 12, Ohio-Keenoil coal-preparation oil for dustproofing and freezeproofing.

Laboratory Equipment Corp., St. Joseph, Mich.—Rapid coal-analysis equipment, including the new Leco ASTM volatile-matter unit.

 Link-Belt Co., Chicago 1, Ill.— Vibrating screens, Multi-Louvre dryer, washboxes and other preparation equipment.

Lecco Machinery Engineering Co., Bluefield, W. Va.—Lecco horizontal dewatering screen with a new-type stainless steel surface and other vibrating screens.

 Ludlow-Saylor Wire Cloth Co., St. Louis 10, Mo.-All types of woven screens in stainless plain and alloy steels, and edge preparations for various types of screening machines.

 Martin Engineering Co., Neponset, Ill.—Vibrators for unloading railroad cars, massive bins and chutes, and for heavy-duty conveyor movement.

 McLanahan & Stone Corp., Hollidaysburg, Pa.—Two-stage-triple-roll coal crusher.

McNally Pittsburg Mfg. Corp.,
 Pittsburg, Kan.—McNally Cradle Idler and a complete line of washing, preparation and drying equipment.

Cross Metals Plant, National Standard Co., Carbondale, Pa.—Wire screens and perforated plates of all types, and the new Conidure centrifugal screen.

Nordberg Mfg. Co., Milwaukee, Wis.
-Symons rod-deck screen, and a line
of grizzlies and coal-preparation screens.

NoVo Div., Industrial Enterprises
 Inc., Chicago 28, Ill. – NoVo Sonic screening machines of German design for %x0 slack coal, removing the minus
 80-mesh material.

Peterson Filters & Engineering, Salt Lake City, Utah-New contour scraper for disc filter and other Peterson filter equipment. Pettibone National Iron Co., Duluth, Minn., Div. of Pettibone Mulliken Corp. -FD-4 Heavy-duty feeder made from parts of popular crawler tractor.

Roberts & Schaefer Co., Div. of Thompson-Starrett Co., Inc., Chicago 6, Ill.—Dutch State Mines heavy-media system employing cyclones.

Steams Magnetic Products, Valparaiso, Ind.—Permanent-type tramp iron magnet made of Indox V.

 W. S. Tyler Co., Cleveland 14, Ohio-Ty-Rock vibrating screen and full line of woven-wire screens.

 U. S. Rubber Co., Mechanical Goods Div., New York 20, N.Y.-U. S. Pilot flexible pipe, fittings and pinch valves.

Universal Engineering Corp., Div. of Pettibone Mulliken Corp., Cedar Rapids, Iowa-Wobbler feeder.

 Wedge Wire Corp., Wellington, Ohio-New Taper-Slot Screen and rod screens.

 Wemco Div., Western Machinery Co., San Francisco 7, Calif.—Wemco-Fagergren flotation cells and laboratory unit.

Wereo Steel Co.—3-ft, single-stage 5-20 Tornado, and Werco woven wire cloth, special analysis screen plate and alloy castings.

Compressors, Drills, Steel and Bits

- Acme Machinery Co., Williamson,
 W. Va.—Self-propelled mine compressors for roof bolting and other uses.
- Bethlehem Steel Co., Bethlehem, Pa.-Drill steels.
- Chicago Pneumatic Tool Co., New York 17, N.Y.—Full line of pneumatic tools and drills.

Davey Compressor Co., Kent, Ohio-Rotary portable compressors and air tools.

Firth Sterling, Inc., Pittsburgh 30, Pa.

-Percussion drill bits.

• Joy Mfg. Co., Pittsburgh 22, Pa.— New CD-43 mobile coal drill with twin booms operated by one man.

• LeRoi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.—Air-leg drills; stationary air compressor.

National Mine Service Co., Indiana,
Pa.—Drill steel, bits and augers.

Schroeder Bros. Corp., McKees Rocks, Pa.—Ingersoll-Rand drilling equipment.

Timken Roller Bearing Co., Canton,
Ohio—Timken rock bits.

 U. S. Rubber Co., Mechanical Goods Div., New York 20, N.Y.—Full line of air and water hose including fittings.

Face Preparation

• Airdox-Cardox Products Co., Chicago 1, Ill.-Shooting truck, multiple

shooting devices, automatic discharge heads, lightweight Airdox tubes, all new; and a new development in roofbolting machines.

· Aeroquip Corp., Jackson, Mich.-

Air-shooting hose.

- Allegheny Ludlum Steel Corp., Detroit, Mich.—Carmet cemented-carbide cutting and drilling bits, including J-style machine bits and W-style drill bits.
- American Brattice Cloth Corp., Warsaw, Ind.—Powder bags for underground use.
- American Cyanamid Co., New York 20, N.Y.-Permissible explosives and blasting accessories.
- Atlas Powder Co., Wilmington, Del.
 Explosives, blasting supplies and accessories.
- Austin Powder Co., Cleveland 13, Ohio-Drill bits and augers, carbide bits and blasting supplies.
- Bowdil Co., Canton, Ohio-Chains for cutting machines and continuous miners; machine bits and bars.

Central Mine Equipment Co., St. Louis 15, Mo.-Kerfmaster undercutting bits.

- Chicago Pneumatic Tool Co., New York 17, N.Y.—Hydraulic coal drills.
- Cincinnati Mine Machinery Co., Cincinnati 25, Ohio—Cutter chains, bars, bits and sprockets for all types of machines.
- E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.-du Pont line of permissible explosives and accessories.
- Fairview Bit Co. Inc., Fairview, W.
 Va.—Semi-automatic bit grinding machine with indexing turret, used for grinding cutter bits.

Firth Sterling, Inc., Pittsburgh 30, Pa.

-Mining-machine and drill bits.

- Hercules Powder Co., Wilmington, Del.—Permissible explosives and blasting supplies.
- Jeffrey Mfg. Co., Columbus 16, Ohio-Jeffrey cutting and drilling equipment.
- Joy Mfg. Co., Pittsburgh 22, Pa.— Coal drills, including the new CD-43, cutters and supplies; Model RPD-1 pneumatic rotary-percussive drill.
- Kennametal, Inc., Bedford, Pa.— Complete line of carbide mining tools and accessories.
- Long Co., Oak Hill, W. Va.—Mobile hydraulic tractor drill.

McLaughlin Mfg. Co., Joliet, Ill.— Bits and tools for all types of drills.

Metallurgical Products Dept., General Electric Co., Detroit, Mich.-Carboloy cutter and drill bits.

National Mine Service Co., Indiana,
 Pa.—Bits and augers.

Olin Mathieson Chemical Corp., Explosives Div., East Alton, Ill.—Explosives and blasting supplies; the Armstrong coal-breaking system.

Frank Prox Co., Inc., Terre Haute, Ind.—Regular and tool-steel-bit conventional cutting chains; tool-steel and tungsten-carbide bits.

Schroeder Bros. Corp., McKees Rocks, Pa.—Ingersoll-Rand drilling equipment.

 Vascoloy-Ramet Corp., Waukegan, Ill.-V-R tungsten-carbide mining tools.

Roof Control

• Acme Machinery Co., Williamson, W. Va.—Air compressor with stoper arms; Jumbolter.

Airdox Cardox Products Co., Chicago, Ill.—New roof-bolting equipment.

American Bridge Div., United States Steel Corp., Pittsburgh 30, Pa.-Ambridge mine roof bolts and accessories.

Armco Drainage & Metal Products, Inc., Middletown, Ohio-Armco tunnel liners.

- Bethlehem Steel Co., Bethlehem,
 Pa.—Wedge-type and sleeve-type roof bolts.
- Chicago Pneumatic Tool Co., New York 17, N.Y.-Self-propelled roof-bolting machines; impact wrenches.
- Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div., New York 22, N.Y.—Roof bolts and accessories.
- Dowty Mining Equipment Ltd., Ashchurch, England—Self-advancing, hydraulic-powered roof support frames for longwall mining.

• J. H. Fletcher & Co., Huntington, W. Va.—Full line of roof-control drills.

Irwin-Sensenich Corp., Irwin, Pa.— TCR mine props of metal construction, designed for easy installation and removal.

- Joy Mfg. Co., Pittsburgh 22, Pa.— Single- and twin-boom hydraulic roof drills, stopers, etc.; Microdyne dust collector.
- Kennametal, Inc., Bedford, Pa.-Roof drilling bits.
- LeRoi Div., Westinghouse Air Brake Co., Milwaukee, Wis.—Vac-Nu-Matic stopers.

McLaughlin Mfg. Co., Joliet, Ill.-Roof augers and tools.

Metallurgical Products Dept., General Electric Co., Detroit, Mich.—Roof-drilling bits.

- Mine Safety Appliances Co., Pittsburgh 8, Pa.—Collecting equipment for drill dust.
- National Mine Service Co., Indiana, Pa.—Top-Tite expansion shells, made by Thompson Products, Inc., Cleveland 10,
- Ohio Brass Co., Mansfield, Ohio—
 O-B expansion shells and plugs.

Osmose Wood Preserving Co. of America, Buffalo 9, N.Y.—Osmose timber-preservative methods and materials.

• Pattin Mfg. Co., Marietta, Ohio-New air-seal resins for use in roof bolting. Pittsburgh Screw & Bolt Co., Pittsburgh 30, Pa.-Roof bolts and accessories.

 Republic Steel Corp., Cleveland 1, Ohio—Heavy-duty support nut and new self-centering head for expansion-shell bolting.

Schroeder Bros. Corp., McKees Rocks, Pa.—New Bantam Bolter, featuring through-the-steel dust collection.

- Templeton-Kenly & Co., Broadview, Ill.—New trip-post jack, Model M279; full line of mine and industrial jacks.
- Timken Roller Bearing Co., Canton, Ohio-Roof-drilling bits.
- Vascoloy-Ramet Corp., Waukegan, Ill.-Roof-drill and auger bits.

West Virginia Works, Connors Steel Div., H. K. Porter Co., Inc., Huntington, W. Va.—Full line of roof bolts, including ready-to-install types.

• Youngstown Sheet & Tube Co., Youngstown, Ohio-VTI mine roof bolts.

Hoisting

• Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.—Automatic man and material cages, elevators, skips, sheaves.

Mine Cars, Shuttle Cars, Mine Locomotives, Utility Cars

- American Car & Foundry Div. of ACF Industries, Inc., New York 17— 8-wheeled mine car, 8 tons, 30 in high, with automatic couplers; also "castertype" trucks for this and other cars.
- Bethlehem Steel Co., Bethlehem, Pa.-Mine cars and wheels.

Differential Steel Car Co., Findlay, Ohio-Big mine car with new body design; also mine-car parts.

Enterprise Wheel & Car Corp., Bristol, Va.—Mine cars; other materials and equipment for mining.

Fred's Welding Service, Grundy, Va.

-HD-8 rubber-tired mine tractors.

- General Electric Co., Locomotive and Car Equipment Div., Erie 1, Pa.-50-ton mine locomotive.
- Goodman Mfg. Co., Chicago 9— New Type 870-20 shuttle cars, 27 in high, 120 cu ft level full.

Irwin-Sensenich Corp., Irwin, Pa.—8-wheeled "Streamliner" mine cars; new patented device for detecting tight bearings, bent axles, misalignment and the like on 8-wheeled mine cars.

- Jeffrey Mfg. Co., Columbus 16, Ohio-66-B shuttle car.
- Joy Mfg. Co., Pittsburgh 22, Pa.— 15-ton 15-SC shuttle car and 6-wheeled 18-SC cars as low as 27 in with a capacity of 41/2 tons.

Coal Show Exhibits

National Malleable & Steel Castings Co., Cleveland—National rubber-load suspension devices; NC-1 friction-controlled mine-car truck; Multi-Pad rubber cushioning devices; Willison automatic couplers; latest railroad-type "F" coupler.

 National Mine Service Co., Indiana, Pa.—TorKars for AC and DC service, including new 25½-in-high model, 110 cu ft, for very-thin seams.

Sanford-Day Iron Works, Inc., Knoxville, Tenn.—15-ton 4-wheeled automatic dropbottom car with overlapping ends and automatic couplers for Alabama Power Co.

Watt Car & Wheel Co., Barnesville, Ohio-Mine cars and other mining products.

Mine-Car Feeders, Hoists, Dumps

- Columbus McKinnon Chain Corp., Tonowanda, N.Y.—Ratio-Feeder, a new idea for transferring coal from shuttle cars to belts.
- Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.—Car hauls, rotary dumpers and accessories.
- Joy Mfg. Co., Pittsburgh 22, Pa.—
 Shuttle car-to-belt transfer feeder.

Kanawha Mfg. Co., Charleston 26, W. Va.—Mine-car dumpings, feeders and dumping installations.

 Nolan Co., Bowerston, Ohio—Nolan automatic loading station, Porta-Feeder carspotter, automatic trip holder, rotary car dump.

Sanford-Day Iron Works, Knoxville, Tenn.-DBS hydraulic carspotter, especially designed for bottom-dump cars.

 W. R. Stamler Corp., Paris, Ky.— Stamler hydraulic carspotters and loading stations; new automatically operated tilt pan for loading points.

Track, Track Cleaners

 American Mine Door Co., Canton, Ohio—Heavy-duty track-cleaning equipment; track-switch thrower.

 Bethlehem Steel Co., Bethlehem Pa.—Heavy-duty trackwork, including prefabricated layouts; steel mine ties, rails, etc.

 Chicago Pneumatic Tool Co., New York 17, N.Y.-Pneumatic spike driver.

 General Equipment & Mfg. Co., Louisville, Ky.—Gemco magnetic trolley contactor.

• LeRoi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.-OT-11 tamper.

Osmose Wood Preserving Co. of

America, Buffalo 9, N.Y.-Tie preservation by pressure treatment.

 United States Steel Corp., Pittsburgh 30, Pa.—Trackwork, including switches and switch stands and rail braces.

West Virginia Works, Connors Steel Div., H. K. Porter Co., Inc., Huntington, W. Va.—Track materials.

Man Cars and Buses, Personnel Facilities

 Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.—Automatic man and material cages, elevators.

Fred's Welding Service, Grundy, Va.

-Personnel buggy.

Irwin-Sensenich Corp., Irwin, Pa.-8-wheeled "Man-Van" cars.

• Lee-Norse Co., Charleroi, Pa.— Model TJ5 "Low-Low" 26-in-high mine portal bus; also "high"-type buses.

• Long Co., Oak Hill, W. Va."Inspector's Friend" personnel carrier.

Mine Conveyors, Belt, Accessories

Armco Drainage & Metal Products, Inc., Middletown, Ohio—Corrugatedmetal conveyor covers.

 Barber-Greene Co., Aurora, Ill.— B-G conveyors, carriers, rollers and accessories, including 60-in-wide troughing and return idlers.

 Boston Woven Hose & Rubber Co., Boston 3, Mass.—Fire-resistant and other conveyor belting, featuring Boston's Balanced-Belt construction.

Conveyor Belt Service, Inc., Duluth, Minn.-Belt repairing and splicing serv-

Ensign Electric Co., Huntington, W. Va.—Centrifugal switches.

• Flexible Steel Lacing Co., Chicago 44, Ill.—Flexco hinged belt fasteners; other fasteners and tools; Rema beltrepair system.

General Splice Corp., South Norwalk, Conn.—Minet belt-splicing system and materials.

• Goodman Mfg. Co., Chicago 9, Ill.

—Goodman rope-frame belts; extensible belts; conveyor parts.

• B. F. Goodrich Co., Akron, Ohio-All grades of conveyor belting used in the mining industry.

Goodyear Tire & Rubber Co., Akron 16, Ohio-Goodyear conveyor belting.

 Hamilton Rubber Mfg. Corp., Trenton 3, N.J.—Hamilton rubber products for the mining industry.

Heintz Mfg. Co., Cleveland 35, Ohio-Portable electric vulcanizing machines for splicing and repairing rubber belting; new lightweight edging machine.

Hewitt-Robins, Incorporated, Stamford, Conn.—Conveyors, idlers, belting.

Irwin-Sensenich Corp., Irwin, Pa.—
Huwood-Irwin belt conveyor.

• Interstate Equipment Corp., Elizabeth 4, N.J.-Aerial tramways.

 Joy Mfg. Co., Pittsburgh 22, Pa.— Extensible belt with "Live Belt Reserve" and low Limberope belt conveyor.

 Link-Belt Co., Chicago 1, Ill.— Conveyor components and accessories.

 Long Co., Oak Hill, W. Va.—Lo-Rope belt conveyor, mobile chain-conveyor head and tail and mobile belt drive.

 McNally Pittsburg Mfg. Corp., Pittsburg, Kan.—Cradle Idler for conveyor belts.

 National Mine Service Co., Indiana, Pa.—Scandura fire-resistant PVC conveyor belting; Hayden Autoclip belt fastener.

Thermoid Div., H. K. Porter Co., Trenton, N.J.-Coledge conveyor-belt construction.

Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N.J.—Ray-Man, Homocord and Homoslex conveyor belting.

 United States Rubber Co., New York 20, N.Y.—Conveyor belting.

 Whitney Chain Co., Hartford 2, Conn.—Whitney mine chain and chainrenewal service.

Pumping and Drainage

Armco Drainage & Metal Products, Inc., Middletown, Ohio—Armco Smooth-Flo and other pipe.

Barrett, Haentjens & Co., Hazleton, Pa.—Hazleton mine pumps, Hazleton-Pleuger submersible pumps.

 Boston Woven Hose & Rubber Co., Cambridge, Mass.—Industrial hose.

Flood City Brass & Electric Co.,
 Johnstown, Pa.—Pumps and parts.

 B. F. Goodrich Co., Akron, Ohio-Large-diameter pipe, discharge and suction, and Convertapipe, and abrasionresistant discharge hose.

Gorman-Rupp Co., Mansfield, Ohio-Mine pumps.

Goyne Pump Co., Ashland, Pa.—High head, slow speed, horizontal cyclone pumps with 60-hp motor and V-belt drive.

Megator Pumps & Compressors, Inc., Pittsburgh 12, Pa.-M Type Megator gathering pumps; new Dolphin floating suction strainer.

• National Mine Service Co., Pittsburgh, Pa.-Alumiron couplings.

Ohio Brass Co., Mansfield, Ohio-Valves.

Raybestos-Manhattan, Inc., Passaic, N.J.-Mine hose. Schroeder Bros. Corp., McKees Rocks, Pa.-Megator "sliding shoe" pumps.

 U. S. Rubber Co., Mechanical Good Div., New York 20—Hose, including U. S. Royal Cord, Matchless, Rainbow, Pressureflex and Royal, plus complete line of hose fittings; "Preferred Eleven" packings; Uscolite plastic pipe, fittings and valves.

• U. S. Steel Corp., National Tube Div., Pittsburgh 30, Pa.—Polyethylene

 Victualic Co. of America, Elizabeth, N.J.-New Style 90 Plainlock couplings and fittings; new automatic cut-off and grooving tool; Victualic standard, lightweight and Snap-Joint couplings; Vic-Easy coupling method for lightweight pipe; special fittings - stainless-steel, plastic, plastic-lined, aluminum.

 Youngstown Sheet & Tube Co., Youngstown, Ohio — Yoloy corrosionresistant steel pipe and conduit, buckeye conduit, Fibercast plastic pipe and stand-

ard steel pipe.

Ventilation

• American Brattice Cloth Corp., Warsaw, Ind.—Brattice cloth and ventilation tubing, featuring auxiliary ventilation, spiral-wire-reinforced tubing for exhausting, and new triangular-shaped tubing.

Armco Drainage & Metal Products, Inc., Middletown, Ohio-Hel-Cor mineventilation pipe; steel linerplate for overcasts.

 Bemis Bro. Bag Co., St. Louis 2, Mo.-Flexipipe Nyprene ventilation tubing.

• Femco, Inc., Irwin, Pa.—New remote control system for controlling fan operation and for shutting it down in case of failure.

• Jeffrey Mfg. Co., Columbus 16, Ohio-Mine fans and blowers.

Joy Mfg. Co., Pittsburgh 23, Pa.—
 Axivane fans; Microdyne dust collectors.

Tractors, Tractor Loaders, Bulldozers, Graders

• Caterpillar Tractor Co., Peoria, Ill.

-New Cat No. 14 motor grader, Cat
D8 Series H tractor with No. 8 ripper
and D9 tractor with Kelley ripper, new
dry-type air cleaner, and Lifetime Lubricated track roller.

Clark Equipment Co., Construction Machinery Div., Benton Harbor, Mich. -Model 280 dozer and 365-hp Model 375A tractor shovel.

• Euclid Div., General Motors Corp., Cleveland 17—"Twin-Power" TC-12 425-net-horsepower crawler tractor with 16-ft "U" blade; 210-hp C-6 crawler with appropriate attachments. • International Harvester Co., Chicago 1, Ill.—27 cu yd Payscraper; TD24 crawler tractor and TD20 with Bull grader.

Oliver Corp., Chicago 6-Crawlertype OC-9 Angledozer, OC-96 front-end loader and OC-4 68-in overhung tractors; Hi-Lift track rollers.

• LeTourneau - Westinghouse Co., Peoria, Ill.-Models C and D Tournatractors with attachments, Power-flow 660 motor grader.

Trucks, Engines, Torque Converters, Generators

Caterpillar Tractor Co., Peoria, Ill.
 Cat D353 turbocharged electric set.

Continental Motors Corp., Muskegon, Mich.—Newly-expanded line of diesel engines and parts.

Cummins Engine Co., Inc., Columbus, Ind.—Diesel engines and auxiliaries.

Ind.—Diesel engines and auxiliaries.

• Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich.—Diesel engines for all purposes.

• Euclid Div., General Motors Corp., Cleveland 17—S-12 Euclid-Easton rear

Fuller Mfg. Co., Kalamazoo, Mich.
 Heavy-duty transmissions for off-highway service.

KW-Dart Truck Co., Kansas City
 Mo.-New 70-ton 450-hp coal hauler.

• Le-Tourneau - Westinghouse Co., Peoria, Ill.—New LW Haulpack trucks up to 80 tons, bottom dumping, including also 22, 27- and 32-ton models.

 Mack Trucks, Inc., Plainfield, N.J.— LRSW 38-cu yd dump truck.

Motors and Controls, Conversion Units, Batteries

Allis-Chalmers Mfg. Co., Milwaukee
 Wis.—"Poxeal" and "Silico-Flex" insulations for open-type motors giving the protection of complete enclosure.

Exide Industrial Div., Electric Storage Battery Co., Philadelphia, Pa.—New Type TG Exide-Ironclad batteries featuring high capacity; new vertical battery chargers.

Ensign Electric & Mfg. Co., Huntington, W. Va.—Permissible 6-circuit AC distribution box for Thunderbird mine; Ensign Bulletin 1100 and 1101 centrifugal switches, Type BJ contactors with new features, Ensign portable underground transformer station and power center, mine-type AC and DC magnetic motor starters, new 800-amp Ensign Giant plugs and receptacles for high-capacity AC mining systems; and new

Bulletin 4700 roller-type centrifugal switch.

Fred's Welding Service, Grundy, Va.

Battery chargers.

General Electric Co., Schnectady 5, N. Y.-Low-height silicon rectifier car; power equipment, motor controls and other electrical products for mines.

• General Equipment & Mfg. Co., Louisville, Ky.—Gemco "Smoke-Roller" belt-conveyor speed switch; Gemco proximity limit switch.

Gould-National Batteries, Inc., Trenton 7, N.J.—Mining batteries featuring the new Gould Siliconic plate.

 Ohio Brass Co., Mansfield, Ohio— Motor starters, circuit interrupters, new lightning arresters, new capacitors.

Reliance Elec. & Eng. Co., Cleveland 17, Ohio-Motors and controls for AC or DC mining applications, including Super "T" and Reliance VS drive.

Westinghouse Electric Corp., Pittsburgh 30, Pa.—500-kw portable silicon rectifier, 50-kw mine-type rectifier, AC and DC motors, mine-type power center, Load-O-Matic hoist control, new insulation for electrical apparatus.

Electrical Wire, Cable, Bonds, Splices, Ground Detectors

• Anaconda Wire & Cable Co., New York 4—Shovel, Type G, miningmachine, shuttle-car and mine-power

Burndy Corp., Norwalk, Conn.—Terminators, splicers, etc., including Hylink repair splices.

 Flood City Brass & Electric Co., Johnstown, Pa.—Line material and electrical specialties.

• General Cable Corp., New York 17, N.Y.—Supertuf Super Service heavyduty mining cables.

• General Equipment & Mfg. Co., Louisville, Ky.—New Gemco magnetic trolley contractor and other new items operating on the same proximity principle.

Hewson Co., Inc., Newark 2, N.J.— VON DC test sets for field testing of insulated cables, transformers, rotating apparatus, switchgear and similar equipment.

 Joy Mfg. Co., St. Louis 10, Mo.— Cable connectors, ground indicators and the new "Lectronic Sentry," described as "a completely new power safety device for underground use."

Kaiser Aluminum & Chemical Corp.,
 Oakland 12, Calif.—Mining-machine trailing cables.

Martindale Electric Co., Cleveland 7, Ohio-Electrical testing instruments, including ammeters and voltage testers, ohmmeters, coil testers, etc.

Coal Show Exhibits

 National Mine Service Co., Pittsburgh, Pa.-NMS Ground Sentinel; "Safe Cable" service.

· Ohio Brass Co., Mansfield, Ohio-Insulators and hardware for AC power transmission; cable fault locators; taps and ground clamps; support fittings, switches and insulators for feeder lines; and rail bonds, collectors and line materials for electric haulage.

· Okonite Co., Passiac, N.J.-Strip and deep-mining cables of all types, including trailing, borehold, etc.

• PLM Products, Inc., Cleveland 11 -New 7,500-V plug and socket.

· Penn Machine Co., Johnstown, Pa. -Everlast Super-Weld rail bonds.

Plastic Wire & Cable Co., Jewett City, Conn.-New PWC plastic mine trailing cables in a variety of constructions; also Type ST cords.

John A. Roebling's Sons Corp., Electrical Wire Div., Trenton 2, N.J.-Power, control and mining-machine cables and the new Roeclamps for surface transmission of power.

· Rome Cable Corp., Rome, N.Y .-Portable cables of the ungrounded and grounded types, shuttle-car cables and

mine-feeder cables.

· Simplex Wire & Cable Co., Cambridge 39, Mass.-Tirex cords and cables C-L-X sheeted cables and Simconex silicone-insulated cables, plus Condex interlocked armored cables, Plastex insulated and jacketed cables, Anhydrex and Anhydrex XX insulated cables, and polyethylene-insulated cables.

. U. S. Rubber Co., Mechanical Goods Div., New York 20-Complete line of friction tapes, including U.S. Holdtite and Security; Usco splicing compound; U.S. Royalistic plastic tape.

• U. S. Steel Corp., American Steel & Wire Div., Cleveland-Amerclad cords and cables for mining services.

Power Transmission

· Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.-Shaftex speed reducers; Vari-Tex speed changers; Time-Tex drives.

• Barber-Greene Co., Aurora, Ill .--New torque-arm conveyor drives.

• Boston Woven Hose & Rubber Co., Boston 3, Mass.-V-belts.

· Dodge Mfg. Corp., Mishawaka, Ind.-New Dodge Dyna-V drives.

Hewitt-Robins, Inc., Stamford, Conn. —Speed reducers.

. B. F. Goodrich Co., Akron, Ohio-V-belts for power transmission.

. Link-Belt Co., Chicago 1, Ill .-Precision chains; other power-transmission equipment.

Raybestos-Manhattan, Inc., Passaic, N.J.-New Poly-V drives.

• United States Rubber Co., New

York 20, N.Y.-Power-transmission belts and timing belts and reinforced belts.

Westinghouse Electric Corp., Pittsburgh, Pa.-Moduline speed-reducing equipment.

Bearings

· Federal-Mogul Service, Federal-Mogul-Bower Bearings, Inc. - Tapered and straight metric roller bearings; ball bearings, and oil seals and "O" rings.

• SKF Industries, Inc., Philadelphia 32, Pa.-New vibrating-screen bearings, and a full line of ball, roller and thrust bearings and pillow blocks.

• Timken Roller Bearing Co., Canton 6, Ohio-Timken tapered roller bearings for the mining industry.

Hydraulics

· Aeroquip Corp., Jackson, Mich .-New Push-Pull Golden Flow couplings; complete line of hydraulic line fittings, and machines for cutting hose and assembling hoses and fittings.

American Brake Shoe Co., Denison Engineering Div., Columbus 16, Ohio-Hydraulic pumps and fluid motors and

hydraulic controls.

Schroeder Bros. Corp., McKees Rocks, Pa.-Hydraulic testing and maintenance

equipment.

Stratoflex, Inc., Fort Worth 14, Tex .-Detachable and reusable fittings, bulk hose and hose assemblies and fieldassembly machines.

Weatherhead Co., Ft. Wayne, Ind.-Brass fittings, flared and flareless; hoseswaging machines; fittings for plastic tubing; forged steel pipe fittings, and reusable and permanently attached hose

Wire Rope, Steel, Steel Products

American Cable and Hazard Wire Rope Divs., American Chain & Cable Co., Inc., Bridgeport 2, Conn.-Complete line of wire rope, including new VHS type. Also Dualoc boom-cable assemblies and wire-rope slings.

Armco Drainage & Metal Products, Inc., Middletown, Ohio-Prefabricated

'Steelox' buildings.

· Bethlehem Steel Co., Bethlehem, Pa.-Wire rope and slings.

· Broderick & Bascom Rope Co., St. Louis 15, Mo.-Powersteel and Yellow Strand wire ropes; slings, clips and other

· Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div., New York 22, N.Y.-Double Gray extra high strength wire rope.

· LeTourneau-Westinghouse Co., Peoria, Ill.-LeTourneau-Westinghouse wire rope

Lukens Steel Co., Coatesville, Pa-Special steels.

· Macwhyte Co., Kenosha, Wis .-New slings, swaged rope assemblies.

. John A. Roebling's Sons Corp., Trenton 2, N. J.-Complete line of wire ropes, including Blue Center, Royal Blue and the new Herringbone grades.

· Union Wire Rope Corp., Kansas City 26, Mo.-Tuffy slings, dragline and bulldozer ropes and mining-machine

• United States Steel Corp., Pittsburgh 30, Pa.-T-1 steel, Cor-Ten, A-R. Man-Ten and Tri-Ten "E" steels for

mining applications.

· United States Steel Corp., American Steel & Wire Div., Pittsburgh 30, Pa.-Tiger Brand wire rope.

Wire Rope Corp. of America, St. Joseph, Mo.-Slings and swaged assemblies for the mining industry.

Lubrication

Ashland Oil & Refining Co., Ashland, Ky.-Industrial and mining lubricants.

Cities Service Oil Co., New York 5-Mining oils and greases.

• Gulf Oil Corp., Pittsburgh 30, Pa .-Mining lubricants, featuring the new Gulf H. D. mining lubricants.

Lincoln Engineering Co., St. Louis, Mo.-Air compressors, manually operated grease guns, fittings and accessories, plus the new Power-Master heavy-duty lubricants drum pumps and the complete line of automatic centralized lubricating systems, both air and electric.

Pure Oil Co., Pittsburgh 24, Pa.-Mine-machinery lubricants, emphasizing "Simplify and save" and featuring Puropale RX and Sultana X heavy-duty oils, Poco PB-15 lubricants, and Poco loader and Ht-EP greases.

Shell Oil Co., New York 20-Full line of oils and greases.

• Sinclair Refining Co., New York 20 -Sinclair lubricants.

Socony Mobil Oil Co., Inc., New York 17-"Mobil program of correct lubrica-

Standard Oil Co. (Ind.), Chicago 80 -Mining lubrication service.

Standard Oil Co. (Ohio), Cleveland -Mining lubricants and services.

• Sun Oil Co. Philadelphia 3, Pa .-New lubricants for coal mining.

• Texas Co., New York 17-Texaco lubricants for coal mining.

Trabon Engineering Corp., Ohio-New intermittent "Multizone" centralized lubricating system, and new spray panel for gears.

Whitmore Mfg. Co., Cleveland 15-Whitmore lubricants for specific equipment or requirements, including open gears, dipper sticks and cams, enclosed gear cases, wire rope and cable, hydraulic units and torque converters; all types of bearings and speed reducers.

New, Renewal Parts

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 Aeroquip Corp., Jackson, Mich. truck air-brake hose.

Cooke-Wilson Electric Supply Co., Pittsburgh 3, Pa.—Gears, pinions, worms, sprockets and other replacement parts.

Electric Steel Foundry Co., Portland 10, Ore.—Esco bucket teeth, cutting edges, and dragline rigging and replacement parts.

• Flood City Brass & Electric Co., Johnstown, Pa.—Pumps and parts; replacement parts for all types of mining equipment; electrical specialties, and line material items.

Goodman Mfg. Co., Chicago 9, Ill.
 Goodman replacement parts.

• Jeffrey Mfg. Co., Columbus 16, Ohio-Jeffrey replacement parts.

• Joy Mfg. Co., Pittsburgh 22, Pa.— "Genuine" Joy replacement parts.

Hose Accessories Co., Philadelphia 32, Pa.—Le-Hi line of air, steam, water and suction hose, including fittings.

Kelly Mfg. Co., Charleston 21, W. Va.—Gears, worms, shafts and other replacement parts for mining machines.

Kensington Steel Div., Poor & Co., Chicago 28, Ill.—Weld-On sprocket rims and grouser plates for crawler-mounted tractors.

L & M Radiator Service, Inc., Milwaukee 16, Wis.—Heavy-duty radiator and accessories for use on all types of heat-exchange problems.

Mining Machine Parts, Inc., Cleveland 14, Ohio-Electrical and mechanical replacement parts and conveyor chain for mining machines.

 National Mine Service Co., Indiana, Pa.—Clarkson Redbird conveyor chain for mining machines.

Ohio Carbon Co., Cleveland 11, Ohio

Replacement brushes for electrical rotating equipment.

Penn Machine Co., Johnstown, Pa.
 Replacement parts for mining machines, including gears, sprockets, shafts, and bronze castings.

Tool Steel Gear & Pinion Co., Cincinnati 16, Ohio-Hardened gears, pinions, sprockets, sheave wheels, shafts, etc., for mining machines, and drive gear and pinion for mine locomotives.

Westinghouse Electric Corp., Pittsburgh, Pa.-Westinghouse renewal parts and services.

 Whitney Chain Co., Hartford 2, Conn.—Chain for loaders and continuous miners.

Maintenance

Arcair Co., Lancaster, Ohio-Arcair

metal-removal process, and arc-time recorders.

Harnischfeger Corp., Milwaukee 46,
 Wis.-Welding machines.

Heli-Coil Corp., Danbury, Conn.— New kit for fast permanent repairs to damaged and stripped threads.

 Kennametal, Inc., Bedford, Pa.— Kenface hardsurfacing material and carbide inserts.

Martindale Electric Co., Cleveland, Ohio-Maintenance equipment and tools for motors and generators; electrical testing instruments; blowers; vacuum cleaners; gear and wheel pullers, etc.

McKay Co., Pittsburgh 22, Pa.—Stainless-steel welding electrodes and wire; hardsurfacing electrodes and line of special electrodes and wire, including lowhydrogen iron powder electrodes.

 National Electric Coil Div., Mc-Graw-Edison Co., Columbus 16, Ohio-Neccobonde oil and moisture resistant insulation for motors and generators.

• National Mine Service Co., Indiana, Pa.—Panel and machine rebuilding.

Ohio Carbon Co., Cleveland 11, Ohio

-Burnishing tools for commutator and ring cleaning.

Proto Tool Div., Pendleton Tool Industries, Inc., Los Angeles 54, Calif.—A full line of hand tools, pullers and power-drive sockets.

Rust-Oleum Corp., Evanston, Ill.-

Sanford-Day Iron Works, Knoxville, Tenn.—Rehabilitation of cast- or rolledsteel wheels.

 Templeton, Kenly & Co., Broadview, Ill.—Full line of jacks and hydraulic rams.

 United States Rubber Co., New York 20, N.Y.-Packing, electrical tape.

Safety, Mine Lighting, Communication

 American Brattice Cloth Corp., Warsaw, Ind.—Trolley guard.

American Mine Door Co., Canton
 6, Ohio-Little Chief rockduster adaptable to either wet or dry dusting.

Elliott Service Co., Mt. Vernon, Ill.-Bulletin-board display service.

• Femco, Inc., Irwin, Pa.—Remotecontrol fan monitors; carrier-current communication systems; wired audio communication; transistor loudspeaking telephones, and permissible mine light-

General Electric Co., Schenectady, N. Y.-Closed-circuit TV; communications equipment.

Goodyear Tire & Rubber Co., Akron, Ohio-Diamond Brand firehose of all-Dacron construction.

Martindale Electric Co., Cleveland 7, Ohio-Protective dust masks and eye shields. • Mine Safety Appliances Co., Pittsburgh 8, Pa.—Edison electric cap lamps; M-S-A Minephones and Hoistphones; rockdusters; Scotchlite reflective signs, tape and paint; complete line of personal protective equipment, including breathing apparatus, Self-Rescuers, firstaid supplies, hats, safety clothing and belts.

Mountain State Equipment Co., Taylorville, Ill.-Wet rockduster.

Motorola, Inc., Chicago 51, Ill.—Twoway radio and Handie-Talkie radio

• National Mine Service Co., Indiana, Pa.—New Wheat electric cap lamp; Riken gas indicators; Bullard hats; Koehler flame safety lamps; tamping plugs; first-aid supplies; moisture absorbents and Willson safety equipment.

Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N. J.—Safety trolley-wire guard.

Mining Specialties, Services

Coal Age, New York 36, N. Y.—Publishing service for the coal industry, including those of its affiliates, Keystone Coal Buyers Manual and Keystone Coal Mine Directory.

Elliott Service Co., Mt. Vernon, N. Y.

-Management Information Bulletin, suggestion systems, Elliott bulletin-board display service.

Mechanization, Inc., Washington 4, D. C.—Coal-mining and utilization publications.

Mining Congress Journal, Washington, D. C.—Publishing services for the coal, metallic and non-metallic mining industries.

Mining and Quarrying, New York, N. Y.—New-products publishing service.

Tires

• United States Rubber Co., New York 20, N. Y.-U. S. Royal MineCushion, a solid rubber tire for shuttle cars and industrial vehicles.

Also exhibiting at Cleveland are:

Cummins Engine Co., Columbus, Ind.

• Denver Equipment Co., Denver, Colo.

Firth Sterling, Inc., Pittsburgh 30, Pa.

• Jones & Laughlin Steel Corp., Pittsburgh 30, Pa.

• R. G. LeTourneau Co., Longview, Texas

Reich Bros. Co., Inc., Terre Haute, Ind.

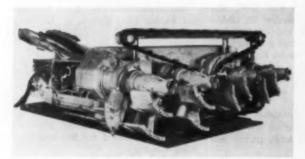
Silver Engineering Works, Inc., Denver, Colo.

Schramm, Inc., Rotadrill Div., West

Wellman Co., S. K., Bedford, Ohio Willys Motor Inc., Toledo 1, Ohio

Equipment, Supplies For 1959 Mining

Efficient equipment for low seams, higher unit capacities highlight this year's Coal Show exhibits at Cleveland, May 11-14.





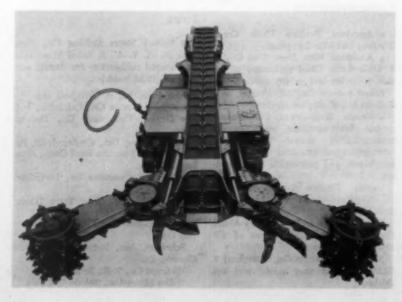
Boring-Type Continuous Miners

Two new types of miners now offered by the Goodman Mfg. Co., Chicago 9, are the Type 300 (left photo) for coal seams from 4½ to 5½ ft, and the Type 425 for seams from 5½ to 7½ ft.

Both feature provisions for varying the cutting height while in operation from 48 to 66 in with the Type 300, and from 66 to 90 in with the Type 425. Width of opening made by the Type 300 is 13 ft 10 in with a cutting height of 48 in and 14 ft 10 in at 66 in. At any height it leaves a 12-ft-wide flat bottom. One 250-hp AC or DC totally-enclosed explosion proof motor powers all machine functions.

Width of place with the Type 425 unit is 11 ft with a cutting height of

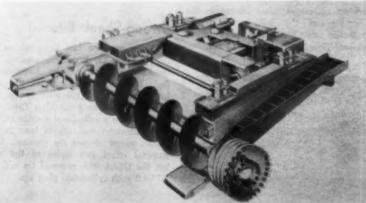
66 in, and 13 ft at 90 in. The sides, the company notes, are arched for strong roof support, the bottom is wide for a good roadway and the roof span is flat and narrow. Rated capacity is 8 tpm at any cutting height. With either AC or DC power, "its maneuverability adapts it to both development and full production work."



Miner for Low Seams

For low-coal seams, Lee-Norse Co., Charleroi, Pa., introduces the Model LCM-28 Miner featuring verticallymounted cutter drums for use in 30- to 48-in seams. The unit mines 16 ft wide. using dual gathering arms having a total reach of 11 ft. The machine is powcred by two 50-hp motors; it is mounted on 12-in-wide crawlers, and the discharge may be provided with 90-deg swing or with rigid attachment for use with bridge conveyors. Rated capacity is from 2 to 3 tpm, and tramming speed is from 0 to 70 fpm. All repairs can be made from the sides of the Miner, eliminating any need to shoot top to provide working





Underground Auger

Compton, Inc., Clarksburg, W. Va., will exhibit the company's new underground auger designed to complete the mining cycle by quickly and safely removing the coal left in the pillars. The machine embodies the same principles employed in the successful Compton augers used for years in strip mining. It is 25 in high and will auger a hole from 24 to 40 in in diameter up to 125 ft deep. Holes can be bored from either side. A combination of electric and hydraulic power drives the machine, which is available in either AC- or DC-powered models.

Low Shuttle Car

A 27-in overall height and a 57-inwide conveyor, plus all-around structural strength, are stated as major features of the Type 870-20 shuttle car by the Goodman Mfg. Co., Chicago 9. Two 10-hp traction motors provide speeds of 4 mph loaded and 4½ mph light. A third 10-hp unit powers the conveyor and hydraulic system. "Ease of handling through power brakes and power steering, and convenience of controls reduces operator fatigue and promotes safety." AC or DC.

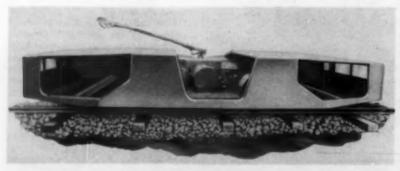




Multiple Shooting With Air

A new multiple-shooting system for Airdox, featuring a battery-powered shooting truck, is announced by Airdox Cardox Products Co., Chicago, Ill. The car is equipped with a rack for the new lightweight Airdox tubes (reduced from 52 lb to 27 lb) and a trailing hose for the compressed air. Sequence valves are installed on the car to permit the shooting of a row of holes in one operation. Time studies show that time savings of 25 sec per shot are achieved. Also included in the system is an automatic discharge head at a safe distance from the face. The new Airdox multipleshooting system eliminates the shear

strips in the tubes, thus further increasing savings in time. A reel for the airhose can be mounted on the battery case as optional equipment. Assuming a row of five holes is to be shot, the system works like this: The operator inserts five tubes into the holes and connects them to the air line through four sequence valves. When shooting pressure is reached in the first sequence valve a baffle directs the air to the second valve, permitting that valve to fire its associated tube. Owing to the operation of the baffles the fourth sequence valve serves two tubes instead of one. Time interval 12 to 15 sec.



Extra-Low Personnel Carrier

A chassis only 24 in high mounted on 14-in cast steel wheels gives a total height of only 26 in above the rail to the Model TJ5-13 Special "Low, Low" Mine Portal Bus made by Lee-Norse Co., Charleroi, Pa. The vehicle is 14 ft 7 in long and 90 in wide. Hydraulically-operated, heavy-duty truck brakes operate on the axles and the motor. Optional dynamic braking can be provided for

steep grades. Power is supplied by one 15-hp gearmotor, controlled by a 4-step reversing controller. Dual stoplights and sealed-beam headlights are provided at each end. The Lee-Norse split roof permits full operator vision in all directions. The bus can be made for operation on 36- or 48-in track gages in mines and for standard railroad gage, 56% in. Motors are 250- or 550-V. DC.

"Full-Dimension" Mining Conveyors

The new Long extensible conveyor system is the first practical high-capacity conveyor method for mining multiple entries from one room conveyor, and for recovering blocks or p.llars in widths up to 100 ft, according to The Long Co., Oak Hill, W. Va. With its articulate side reach of 100 ft or more, this "Full Dimension" system combines the flexibility of shuttle-car mining with the extra capacity that comes with continuous loading.





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Strong-Shank Bits

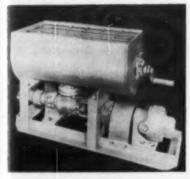
Mining-machine bits designed to reduce shank breakage in standard bit blocks are announced by Kennametal, Inc., Bedford, Pa. Shanks of the new bits have a short rib along each side behind the knockout shoulder. These two ribs produce a cylindrical section of ¹¹/₁₆ in in diameter and 1½ in long in the shank, where stresses are greatest. Kennametal offers two styles of the new bit, the U3RA with recessed tip and the U7RAB with cylindrical plug tip.

Plastic-Jacketed Cables

New PWC mine cables, in a wide range of constructions, are announced by Plastic Wire & Cable Co., Jewett City, Conn. Included in the list are single conductor, small-diameter Type W, parallel Type G with round grounding conductor and 4-conductor flat cable for AC service. The jackets are safety-orange in color. Type ST cords with P-124-BM listing will be displayed in conventional black, safety yellow or gray oil-proof constructions. A special line of shotfiring cable of extra-long life will also be featured.

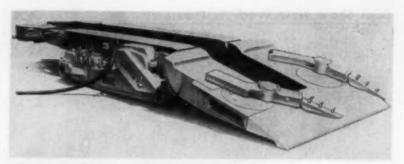
Flexible-Edge Belting

"Coledge" conveyor-belt construction, designed and tested by Thermoid Div., H. K. Porter Co., Inc., Trenton, N. J., is a solution to the costly problem of replacing conveyor belts worn out at the edges but otherwise in good operating condition. The extreme flexibility of Coledge construction is achieved by increasing the amount of rubber and decreasing the amount of fabric at the edges. This allows the edge to give when run against any obstruction.



Mounted Rockduster

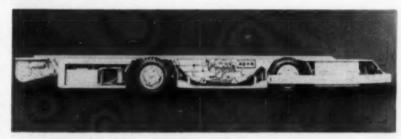
New M-S-A Model 80 slurry rocklust distributor is designed for permanent mounting on any mining machine, neluding continuous miners, loading nd cutting machines, roof bolter, coal Irill or similar motorized equipment. The unit, produced by Mine Safety Appliances Co., Pittsburgh, Pa., can be powered either mechanically or hyraulically from the mining machine. The Model 80 has a tank capacity of 80 lb of rock-dust with 4.8 gal of water. A complete batch of slurry can be delivered in 31/2 min at a discharge rate of 50 lb per min. Using the standard nozzle and 50 ft of hose, the machine can rockdust approximately 17 lineal feet of rib and roof in 11/2 min. Only 2 min of agitation by a manually-operated rotator is required to mix a batch.



80-Hp AC Loading Machine

A new 80-hp loading machine, designed primarily for AC coal mining operations and mining of minerals heavier than coal is introduced by The Long Co., Oak Hill, W. Va. The improved, more-powerful Model 188-E takes full advantage of AC motor design, which offers more horsepower in a more compact unit. The motor occupies the same space as that taken by the 40-hp motor in the DC version. Loading rates of the 188-E is from 8 to 10 tpm in heavy digging. The single motor operates continuously

with tramming and conveyor operations actuated by clutches. At an overall height of 25% in, the new loader can operate in a 30-in seam or less. A counterbalanced head and swing boom provide maximum versatility, even permitting the use of Long Piggyback conveyors and shuttle cars on the same section. With fewer mechanical and control parts than any other loader, the Long machine also offers important savings in maintenance and in spare-parts inventory, the company says.



Shuttle Car for Thin Seams

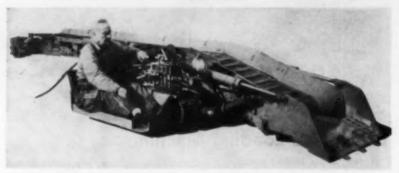
For very thin seams a new model Tor-Kar shuttle car with an overall body height of only 25½ in will be exhibited by National Mine Service Co., Pittsburgh, Pa. The Type 26 TorKar has all the design features of the larger units previously announced by the company. Basic capacity is 110 cu ft with optional sideboards adding another 8½ cu ft for each inch of sideboard height. The new car can be equipped for AC or DC operation. Either way, the car uses only one motor and a torque converter. National Mine Service also offers Type 30 Tor-Kar up to 42 in high, and Type 48 up to 60 in in height.





Conventional Mining Equipment

A new hydraulic face drill, the CD-43, and a new 15-BU loading machine are announced by Joy Mfg. Co., Pittsburgh, Pa. The new drill requires only one operator to handle the twin booms. The machine features 10-12 ft feed, eliminating the need for changing auger steels. The new loading machine is rated at 15 tpm to pair up with a companion 15-SC shuttle car which carries 15-ton payloads. Also available is the 11-RB bottom-cutting machine featuring high cutting capacity to round out the line of equipment.



Low-Height Shovel

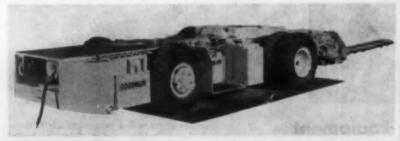
The new Whaley low-height shovel announced by the Myers-Whaley Co., Knoxville 1, Tenn., has an approximate overall height of 28 to 31 in, is 16 ft long and 54 in wide, and weighs about 6,450 lb. The oscillating shovel is 48 in wide, and the capacity of the machine

is approximately % to 1 ton of rock per minute. Features include: manual-control hydraulic-intermittent operation; crawlers driven by independent hydraulic motors; conveyor drive also hydraulic motor, with instant starting and stopping; adjustments by hydraulic cylinders; and hydraulic pumps driven by one electric motor.



Remote-Control Borer

Joy 2BT-2 "Twin Borer" for seams from 6 to 8 ft high is equipped with an integral dust collector and precipitator. Mining height of the machine can be varied by adjusting top trim chain and changing boring-arm diameters. Rated at 8 tpm, the Twin Borer advances at a rate of 2 fpm. Also to be shown is a remote control system for the boring-type machine.



Universal Cutter

The Type 2430 universal cutter is offered by the Goodman Mfg. Co., Chicago 9, as a fast-moving fast-working machine for hard cutting anywhere in the seam, as well as for utilization in shearing.



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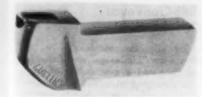
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This is a new automatic trip holder for mine cars from The Nolan Co., Bowerston, Ohio, eliminating the need for dangerous, time-wasting manual manipulation of skids on down grades. It is designed for use in conjunction with the Nolan Porta-Feeder, which auto-matically spots mine cars for loading. The "Nolan Hold-A-Trip" is placed between the track rails, where it is clipped firmly in place to the ties. A control hose runs from the trip holder to the pressure system of the Porta-Feeder. When the feeder is started, oil pressure operates a cylinder on the trip holder to release the brake, thus permitting the cars to move. When the Porta-Feeder is stopped, the brake on the Hold-A-Trip is automatically set and the cars are held absolutely immovable. The trip holder consists of an arrangement of cast steel sprockets and steel chain with an ultimate strength of 150,000 lb and a heavy roller chain and sprocket drive to a 24in brake wheel. The brake band is spring set and the lever is equipped with hydraulic cylinder for brake release.

Heavier Oscillating-Head Miner

Model CM37X Miner, built by Lee-Norse Co., Charleroi, Pa., is a rugged combination of loading machine with rotary-oscillating cutter heads designed to produce larger size consist. The new model weighs 8 tons more than older models, with about 25% of the increased weight in the cutter head where it does the most good, the company says. The machine is equipped with three 50-hp motors and 36-in cutting discs. Sumpingtramming speed varies from 0 to 90 fpm on 14-in-wide crawlers. The 24-in-wide discharge conveyor swings 90 deg. The machine is designed for low maintenance, Lee-Norse says, through the use of interchangeable unit assemblies, hydraulic motors and electric motors. The CM37X has a minimum mining range of 42 in and a maximum of 8 ft 6 in, and a mining width of 8 ft 6 in.



Cutter Bits

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Two new cutter bits, known as AP-10 end-mill type and AP-10D plug type, are announced by Austin Powder Co., Cleveland, Ohio. They are said to provide maximum service life under severe cutting conditions. This is achieved by virtually eliminating tip loss and shank breakage. The tip area on each model features a large surface for brazing of the carbide inserts. Alloy-steel shanks also are featured in the new bits.

Ropeframe Conveyor

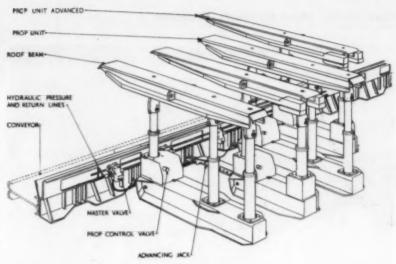
Included in the list of improvements in the patented Ropebelt conveyor of the Goodman Mfg. Co., Chicago 9, are imple nonwalking wire-rope supports with each side independently adjustible in height, and with the cross members located between belt strands. Separate return idlers hang from the wire loopes. A new low-vein design features a rope height of 9 in and an overall height of 13 in.

Rope-Frame Conveyor, Idlers

Hewitt-Robins offers a rope-supported mine conveyor 40 in wide and 60 ft long. The unit includes head and tail sections and conveyor supports by Robins Conveyor Div., and rubber belting by Hewitt Rubber Div. The company also introduces the spiral rubber idler. Conveyor features are easy installation, better operation, provision for relubrication, simple, sturdy construction and maximum safety, the company states.

Low Boring-Type Mining Machine

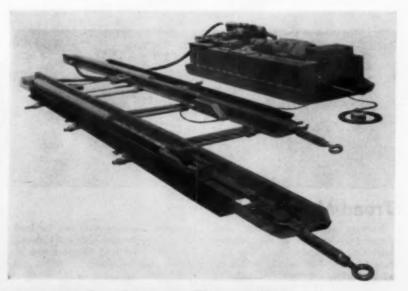
Jeffrey Mfg. Co., Columbus, Ohio, offers the 25¼-in-high Model 86-A Colmol, which will operate in seams as low as 28 in, making a cut 14 ft 7 in wide. Specially-designed cutting and gathering chain carries coal to the center of the Colmol, then up and onto the swinging discharge conveyor. Cusps are cut off smoothly even when the breaker-arm head is raised 8 in to achieve maximum mining height. Other advantages are better size consist, greater speed and higher efficiency, Jeffrey says.



Longwall Roof Supports

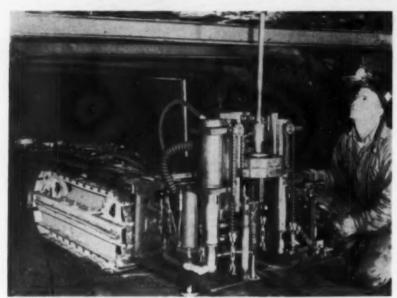
The possibility of achieving a productivity rate of from 75 to 100 tons per man shift through longwall operations in U.S. coal seams is seen by a British manufacturer, Dowty Mining Equipment, Ltd. A daily advance of 15 ft per day on a 200-yd longwall retreating face would provide a daily output of from 1,500 to 2,000 tons. The crew would number 20 men. The Dowty exhibit at the Coal Show will feature a roof-support system for use in the fore-

going suggested method of mining. Known as the "Roofmaster" system, the equipment consists of self-advancing, hydraulic-powered support frames. Only two men are required for continuous operation of 200 support frames. Also to be featured is the Dowty Canopy, which provides mobile support over and around a continuous-mining machine or loading machine for security against roof falls. A description of the Canopy appears on p 159.



Spotter for Bottom-Dump Cars

S-D "DBS" hydraulic carspotter, made by Sanford-Day Iron Works, Inc., Knoxville, Tenn., was developed to effectively move trips without damaging bottom-dumping doors on mine cars. The pushing dogs operate outside the limits of the doors. The track unit is in two sections, each weighing 1,200 lb and only 18 ft long. One standard model can be used with cars of any length. The power unit is specially designed with hydraulic controls mounted on the power unit itself in one panel for easy servicing. There are no hydraulic controls on the track unit, the manufacturer says.



Bolter Collects Dust

A hydraulic roof drill on crawlers, with a built-in dust-collecting system, is new from Schroeder Bros. Corp., McKees Rocks, Pa. The "Bantam Bolter" maneuvers with dual controls which operate the crawlers together or independently. Tramming speed ranges up to 175 fpm.

Dust collecting can be done through conventional suction-head arrangement or through the drill steel. In the latter method the dust is taken through the hollow steel and is carried through rubber tubing to a collector on the machine. The machine is 23 in high, 36 in wide and 102 in long. Operating feed length is 22 in and up, depending upon roof height.



Tread-Mounted Loader

Features of the Type 964 treadmounted loader cited by the Goodman Mfg. Co., Chicago 9, include a 24-in height, a 7-ft-7-in cleanup width and a 30-in-wide conveyor "to make its rated capacity of 8 tpm conservative." Four interchangeable 20-hp motors power all functions, with two for loading and two for tramming and hydraulic functions. Good road clearance and 12in-wide treads, Goodman points out, make for easy going on all types of bottom. The machine is available in AC or DC types.

Cemented-Carbide Tools

New Carboloy cemented-carbide mining tools, the CC-9 and CC-7 machine bits, will be featured by Metallurgical Products Dept., General Electric Co., Detroit, Mich. The new bits were designed to meet requirements of modern, high-powered mining machines. The CC-7 has 57% and the CC-9 75% greater shank cross-sectional area at the gage line to resist shank bending and breakage of the bits, the manufacturer points out.

Belt-Conveyor Developments

Joy Mfg. Co., Pittsburgh, Pa., will show a low "Limberope" rope-frame belt conveyor and a new system of extensible conveying with "live belt reserve." In this system, enough belt is stored in live reserve for an entire shift of continuous advance or retreat without stopping to add more belt. Joy belt turns are the key to the system.

Thin-Seam Mining Equipment

For the thin-seam operator, Joy Mfg. Co., Pittsburgh, Pa., will show new low equipment for loading, hauling and belt feeding. A new low loader is only 24 in high and carries a rating of 10 tpm. A 6-wheel shuttle car, the 18-SC, is available in models as low as 27 in with 4½-ton capacity. The model to be shown at Cleveland is a narrower car, 32 in high with 3½-ton capacity. Also included is a belt feeder for efficient loading onto belts in thin seams.



Trip Post Jack

For roof-bolt recovery with safety and ease Templeton, Kenly & Co., Broadview, Ill., offers the new M279 trip post jack. In use, the jack is placed alongside the bolts, which then are removed by hand or power wrench. Then, standing 25 ft away, the jack is tripped with the rope. The jack is available in four standard and other lengths and has a 24-in head travel.

Automatic Tilt Pan

W. R. Stamler Corp., Paris, Ky., offers a new automatically-operated tilt pan for use at conveyor-belt heads at mine-car loading points. The automatic pan prevents spillage between cars during continuous loading.

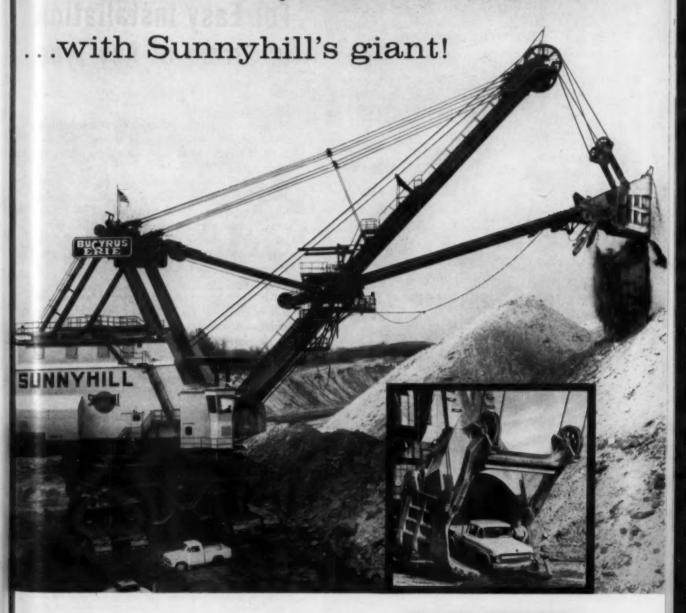
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95 tons a minute

Sunnyhill Coal's Bucyrus-Erie 1650-B moves 65 yards of overburden — 95 tons' worth — on every cycle! Like the 55-cu.-yd. River Queen, it is one more example of the top quality and performance you've come to expect from Bucyrus-Erie.

The design of the 1650-B is flexible. It can be equipped with most suitable digging combinations for your specific needs. Dipper capacities, for example, range from 40 to 65 cubic yards. Dumping reach can be varied from 135 to 178 feet, depending on your choice of boom and handle lengths.

A Bucyrus-Erie representative will be pleased to discuss how a 1650-B can fit into your operations. Write Dept. 3L, Bucyrus-Erie Company, South Milwaukee, Wisconsin.



Visit our booths at the COAL SHOW

CLEVELAND, MAY 11-14

and see the new BLAST HOLE DRILL!



BUILDS BETTER EQUIPMENT

Improved, Republic RS-1 Expansion Shell







EMBOSSED DESIGN provides extra strength and increases pressure area. Self-centering, and gives maximum holding power with no loss of headroom. (Plates also available in other types, various sizes.)

REPUBLIC SQUARE

FORGED WASHER provides a smooth bearing surface larger than bolt head.

SQUARE HEAD cleanly forged as one piece with washer. Unchamfered to give solid surface for tight wrench fit.

LENGTH IN INCHES is plainly marked on head of every Republic Mine Roof Balt.

EXTRA STRONG ALL PURPOSE SHELL For Easy Installation in Strata of Any Type

In the panel at left, you can quickly check features of Republic's new, improved RS-1 Expansion Shell. It is only one of Republic's many advanced mine roof bolting products.

To hold any type of mine roof or rock strata safely and economically, Republic offers the largest combination of roof bolts, roof plates, and expansion shell assemblies available. They can be used in hard rock metal mining, soft rock operations, or to provide support in tunnel work, miscellaneous foundation work, rock cuts, and similar projects.

For more information on Republic's complete line of roof bolt assemblies, or for engineering assistance, contact your Republic representative, or mail coupon.



MATERIAL CONTROL CERTIFICATE PURNISHED BY REPUBLIC with every roof bolt shipment gives specific physical properties of the steel used. Guesswork and assumptions about performance are eliminated. Specific performance data for the heat, or heats, of steel used are indicated, including the mill order number, heat number, yield point in pounds per square inch, yield and break point in pounds for the size of the bolts.

CO

REPUBLIC STAINLESS STEEL OFFERS MINING **ECONOMIES.** Performance efficiency of this disc-type filter was increased two ways when cotton cloth was replaced by Republic ENDURO® Stainless Steel screen. First, much smaller fines were recovered. Second, intervals between filter replacement were extended many times. Republic ENDURO Stainless Steel is ideal for a wide variety of mining equipment applications. Send for data.





REPUBLIC ELECTRUNITES GROOVED-END CARBON AND STAINLESS TUBING offers cost- and time-saving advantages in many mining and construction applications. Quickly and easily joined with Victaulic Coupling, grooved-end tubing is ideal for air, water, drainage lines, in highway, tunneling, and other heavy-duty operations. As work moves ahead, lines can be taken up and relaid to conform to changing needs. Republic Light Weight ELECTRUNITE Tubing is engineered and produced to meet severe service and laying conditions. For full information, mail coupon.



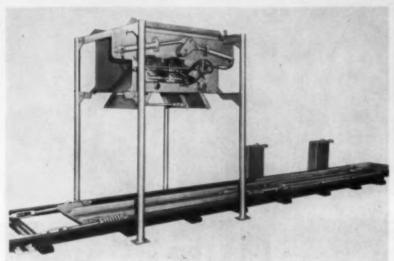
REPUBLIC HIGH STRENGTH STEEL IMPROVES SERVICE LIFE for many types of mining equipment. In mine car and hopper car use, for example, its superior strength and resistance to corrosion greatly reduce maintenance costs. Republic High Strength Steel also provides good impact and abrasion-resistance. It will pay you to evaluate all of these advantages in terms of your equipment performance specifications. For more information, mail coupon.

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Automatic Loading Station

The "Nolan Automatic Loading Station" has been completely redesigned by The Nolan Co., Bowerston, Ohio to simplify both hydraulic and electrical controls. The hydraulic system now consists of one 4-way valve only and two hoses to the hopper for the operation of the gate cylinders. A special control panel has been developed for all the functions of the station. Hoses are complete with self-seal couplings and all electrical conductors with polarized safety plugs and receptacles. The loadingbar, belt, shut-off paddles and car-body switches are all electrically operated through the special control panel. This design is the ultimate in simplicity and results in carefree service. The sensitive Nolan loading bar is under the hopper bottom to protect it from damage by lumps. The belt-safety paddles are designed to shut off the belt or conveyor when material in the car has reached a point where spillage will start over the side. The hopper may be roof bolted as shown, or erected on structural frame or yieldable arches. Absence of hydraulic valves and manifolds on the hopper, and the simple electrical circuits required for the operation of the Nolan loading station, make this design positive and unaffected by vibration of the hopper.



Hydraulic Carspotter

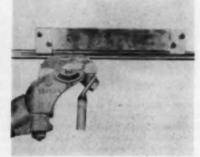
A new design has been adopted by The Nolan Co. Bowerston, Ohio, which eliminates all hydraulic valves from the track unit and simplifies the power unit by the use of one 4-way valve only. The "Nolan Hydraulic Porta-Feeder" permits the quick and continuous movement of cars with a highly-desired degree of efficiency. The unit can be quickly installed, requiring no excavation work of any kind. The exclusive Nolan side-by-side cylinder arrangement and the barney plate assembly has

an overall length consisting of the stroke plus only 72 in. This extremely short length lessens the weight and permits easy transportation around short-radius curves. The cylinders are actuated to move the car one-half its length, the strokes overlapping to secure a full car length with the alternate operation of the two cylinders. The cylinders are single-acting. Each piston retracts the opposite piston by means of a preformed plow steel wire rope passing around a cast steel sheave. The power unit is equipped with a system pressure relief valve. Each feed hose also has a pressure relief valve to protect the Porta-Feeder in case a backward thrust might be exerted by a locomotive. Operation is by a three-button push-button station, which has start and stop buttons for the power unit and a "move" button for the car feeder. Push-button control is accomplished by the use of one four-way solenoid valve, together with a directional limit switch. This is the ultimate in simplified control, the company says.



Heavy-Duty Lubricant

Gulf Oil Corp., Pittsburgh, Pa., announces Gulf Mining Lubricant H. D., designed for superior performance with heavy loads at high temperatures. Supplementing Gulf Mining Lubricant B, the new product is a multipurpose, semifluid grease having superior resistance to water. The lubricant can be applied by pouring or through a pressure gun. It is packed in 5-gal or 120-gal drums, the former having a pull-out stop, making it unnecessary to remove the lid.



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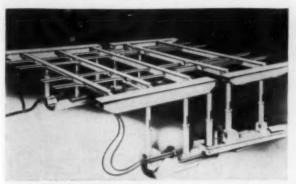
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Magnetic Trolley Contactor

Unlimited life is claimed for the "Gemco" magnetic trolley contactor, made by General Equipment & Mfg. Co., Louisville, Ky. The trolley shoe never touches the contactor, thus the contactor is not destroyed or abused by contact with the shoe. The contactor also features positive direction sensing as required for safe and reliable operation of signals and switches. There can be no false signals or switch operation because rebound of the contactor is impossible.

Roof-Bolt Devices

Republic Steel Corp., Cleveland, Ohio, announces Republic's new heavy-duty support nut and self-centering head designed to improve the security of roofbolt installations.





Self-Advancing Roof Shields for Entries

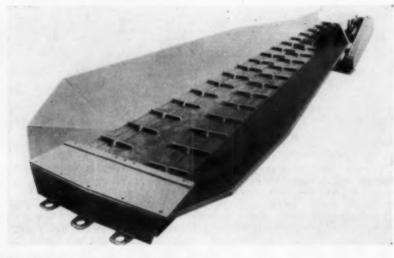
Dowty Mining Equipment, Ltd., Ashchurch, England, introduces two hydraulic-powered roof shields designed for use at the face in room-and-pillar mining. The new shields are known as the Dowty Canopy and the Dowty-Rodjo shield, the latter named after its inventor, R. D. Josephs, mining engineer, Pittsburgh, Pa. The Canopy (left) is intended for use with continuous miners to provide constant protection for the operator and machine. It consists of two support units interconnected by longitudinal and transverse roof beams. Hydraulic jacks advance the two sections in sequence. The Dowty-Rodjo

(right) is light enough to be erected and dismantled by hand. Hydraulic rams telescope and steer it forward as the heading advances. Basis of the design is two interlocking grills bearing against the roof but allowing room for roofbolting operations between the beams. One grill holds while the other advances.



Multi-Bar Ripper Head

Adjustability is the major advantage claimed by Bowdil Co.'s new multi-bar ripper head. According to Bowdil, each cutter bar is independently and easily adjusted through side ports, making it possible to retain equal tension on all chains at all times. In addition, all chains are similar in kerf and lacing arrangement for interchanging. All sprockets also are interchangeable. Chains may be run with or without renewable liners in the cutterbars to suit the mining conditions. The ripper head assembly, says Bowdil, includes an improved design head-drive-shaft and sprocket assembly which makes it possible to renew a sprocket in minutes without removing the shaft. Other advantages listed by Bowdil are: improved hard-surface wearing shoes used in the cutterbar head to eliminate maintenance on roller and bearings; and sprockets clamped to an oversize shaft, thus locking shaft and sprockets into an integral unit that completely eliminates deflection, the chief cause of bearing failure. Bowdil office at Canton, Ohio. The Bowdil head is an exact replacement for the original on ripper-type units.



Belt-Conveyor Feeder

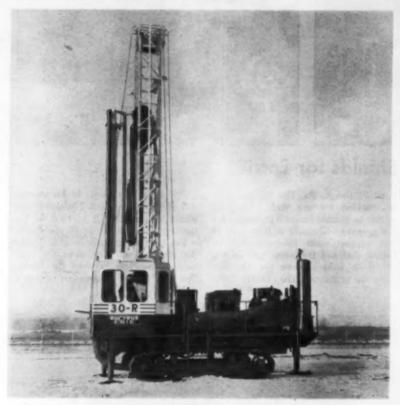
"Ratio-Feeder" is a new idea for transferring shuttle-car loads onto belt conveyors, says the maker, Columbus McKinnon Chain Corp., Tonawanda, N. Y. Ratio-Feeder takes coal from the shuttle car, without boom elevation, at the car's maximum discharge rate. It feeds coal to the belt at a slower, uni-

form rate. This increases shuttle-car capacity, increases belt capacity or makes possible the use of smaller belts, prevents belt damage and practically eliminates belt spillage and cleanup. The company says the units pay for themselves in 6 mo in direct labor savings

Rotary Car Dumper

Engineers of The Nolan Co., Bowerston, Ohio, have developed an accurate torch-cutting method for production of gear segments and pinions for use with the Nolan rotary car dumper. The use of torch-cut gears offers a low-cost means for positive drive and positive lock of the gear segments to the dump rings.

Flame cutting of these gears automatically results in a hardness of 24-26 Rockwell "C" with a penetration of 3/2 of an inch. The accuracy of the gear-cutting templates is such that a 60% tooth contact is secured. The rotary dumper is one of a number of units to be introduced by the Nolan Co., including an automatic loading station and other car-handling equipment.



Rotary Overburden Drill

The 30-R is a new heavy-duty rotary blasthole drill by Bucyrus-Erie Co., S. Milwaukee, Wis. This is a medium-size unit for drilling holes from 6¼ to 7% in in diameter. The 30-R is available either on crawler mounting (30-RC) or truck mounting (30-RS) or on a truck mounting with power takeoff from the truck engine (30-RP). Down-the-hole

tools are available for all three units. Similar in appearance to the Bucyrus-Erie 40-R and 50-R drills, the 30-RC has a pipe rack which holds five lengths of 21-ft 3-in pipe. Speed of the hydraulically powered top rotary drive can be varied from 0 to 110 rpm. Hydraulic cylinders are employed to rapidly raise or lower the 36-ft 3-in high derrick.





High-Voltage Cable Coupler

Convenience and safety are highlights of the new AC cable couplers made by PLM Products, Inc., Cleveland, Ohio. The couplers, rated up to 7,500 V, are designed to permit wider use of AC power in strip- and deepmining operations. Each coupler consists of a plug and socket with three contacts for phase conductors and one for grounding. The aluminum protective housing will not disengage before electrical contact is broken. The couplers can be had on heavy-duty sled bases, and 2-, 3-, or 4-way assemblies also are available.

Lifetime Lubrication

Lifetime-lubricated track rollers, carrier rollers and idlers are available from Caterpillar Tractor Co., Peoria, Ill. Floating ring seals with metal-to-metal sealing surfaces eliminate field lubrication, rewarding users with increased machine use, lower maintenance costs and other savings. Other improvements noted are: more rugged sleeve-bearing design for built-in shock-absorbing ability, hardened shafts of larger diameter for additional beam strength and a steel track-roller hub instead of the former castiron type to extend service life.

Bigger Grader

No. 14 motor grader, rated at 150 hp and weighing 29,250 lb, is the largest, most powerful motor grader ever made by Caterpillar Tractor Co., Peoria, Ill. Designed for high productivity, the new machine uses 10-in rims for 14:00x 24 tires, providing a wide rim base to straighten sidewalls of the tires and reduce side rolling. Of the machine's 29,-250-lb weight, 22,270 lb rest on the drive wheels. This provides better traction and fuller utilization of the grader's size and power. A turbocharged engine with an 18% torque rise powers this Series B grader. The transmission provides six forward and two reverse speeds.

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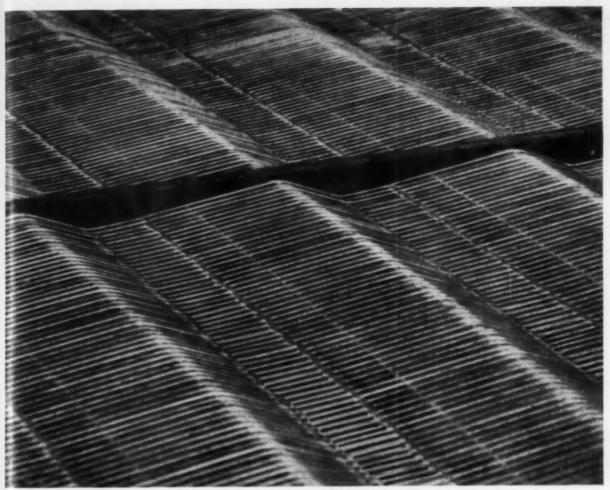
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Close-up of Hendrick CASCADE shows "step" construction that improves dewatering efficiency.

screening capacity soars with new Hendrick CASCADE!

The new Hendrick CASCADE Screen eliminates flooding due to overloads in dewatering slurry and small coal. This means you can feed up to twice as much slurry and small coal onto the new Hendrick CASCADE Screen — and never worry about flooding. Its special cascade construction breaks up the flow layer and causes a tumbling action over the wedge shaped wires that greatly improves dewatering efficiency.

As a result, you can sharply increase draining capacity. Or, use smaller screens to achieve the same throughput as before, and save on space and invested capital.

Hendrick CASCADE Screens are now available with openings from ¼ to 1 m.m., in durable stainless steel. Write for more information, or call your local HENDRICK REPRESENTATIVE.

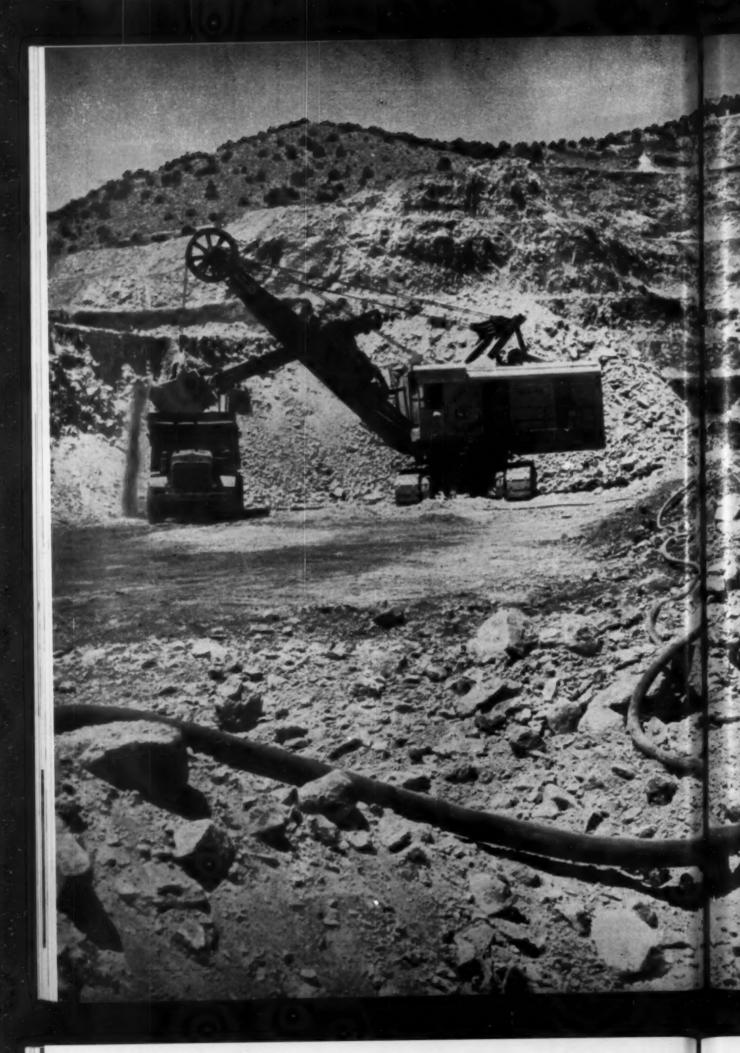
The Hendrick Welcome Mat is out at the Coal Show! Visit Booth 1509.

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PERFORATED METAL SCREENS . WEDGE WIRE SCREENS . CASCADE WEDGE WIRE SCREENS . WEDGE SLOT SCREENS RUBBER CLAD PERFORATED SCREENS . FLANGED LIP SCREENS . FLIGHTS . SHAKER AND CONVEYOR TROUGHS





YOU GET LONGER LIFE OUT OF ANACONDA SH-D SHOVEL CABLE— WE PROVED IT IN OUR OWN MINES!

Anaconda *uses* shovel cable as well as makes it. The important experience gained from that use and testing of cable under actual field conditions goes into the design and manufacture of the Anaconda Shovel Cable *you* buy.

In Anaconda SH-D Shovel Cable you get cable built to eliminate on-the-job power failures caused by such conditions as sun, jagged rocks, water, kinks, runovers.

The insulation of Anaconda's SH-D Shovel Cable is a special high-grade butyl that withstands ozone, heat and moisture. Patented rubber-cored ground wires help prevent breaks and insulation cutting from kinks and runovers. The neoprene jacket is exceptionally tough and abrasion-resistant. Every design and component has been job-tested—your assurance of superior quality and performance.

Call on the Man from Anaconda with your cable problems. Or see your local Anaconda distributor. For new descriptive Bulletin DM-5818, "Anaconda Securityflex Portable Cables for the Mining Industry," write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

Anaconda SH-D Shovel Cable at work in an open-pit mine. Continual on-the-job testing of Anaconda designs under the roughest conditions enables us to produce extra long-life shovel cables that prevent power failures from heat, moisture, rugged terrain, kinks and runovers . . . all of this saves you money, assures continued and uninterrupted production.

ANACONDA®

FOR SHOVEL CABLE





High-Capacity, Off-the-Highway Trucks

Highlighting the offerings of LeTourneau-Westinghouse Co., Peoria, Ill., will be "Haulpak" rear-dump trucks in 22-, 27-, and 32-ton models, and the "Haulpak 80 Coal Hauler." All units feature "Hydrair" suspension systems, meaning no conventional springs or axles. The 80-ton coal hauler is a bottom-dump

unit. Powered by a Cummins V-12 450-hp engine, the truck operates at speeds up to 40 mph. It has an Allison torque converter with four speeds forward, two reverse, and automatic lockup in the three highest forward speeds. Box-beam construction and corrugated side sheets give maximum strength at minimum

weight to the trailing unit. The entire body is fabricated from special highstrength steel approximately 30% stronger than mild steel. Overall dimensions of the Model 80 are: length, 55 ft 9 in; width, 12 ft; height, 12 ft; wheelbase, 43 ft 6 in.



Maneuverable Front-End Loader

The Model OC-96 front-end loader, a maneuverable loader with counter-rotating crawlers, is a useful machine offered to coal operators by Oliver Corp., Chicago 6, Ill. These loaders are ideal for numerous coal-mining applications, including cleaning of coal, cutting and light dozing, maintenance of roads, stockpiling, and loading trucks, the company says.

Small Core Barrel

E. J. Longyear Co., Minneapolis,

Minn., announces the new "Wire Line" core barrel for small-diameter drill holes. Also included are diamond bits for the various sizes of the new barrel.

38-Yd Coal Truck

Mack Trucks, Inc., Plainfield, N. J., shows an LRSW dump truck with a 38-yd coal body. This unit is a 6-wheel (4-wheel-drive) dumper designed for rugged duty. It is powered by a 330-hp diesel engine and features Mack's Planidrive bogie.



Grouser Plates

A complete line of wear-resistant grouser plates for all of the more popular crawler tractors is offered by Kensington Steel, Division of Poor & Co., Chicago 28, Ill. These plates are of heavy-duty design yet are completely interchangeable with those originally mounted on the tractor. There's a Kensington tread to fit regular or semi-grousers with cleats or flat shoes.



Multiple-Use Overhung Tractor

The OC-4 overhung tractor, a product of Oliver Corp., Chicago 6, Ill., is an all-purpose, specially-designed, mobile crawler featuring a 68-in overhang of the engine ahead of the crawlers. This displacement provides a platform at the rear for mounting hydraulic or pneumatic equipment. It can be adapted to mining exploration, core drilling and highwall drilling.

High-Strength Wire Rope

VHS very-high-strength wire rope is now being featured by the American Cable and Hazard Wire Rope divisions of American Chain & Cable Co., Bridgeport 2, Conn. Size for size, the company notes, VHS is at least 15% stronger than improved plow steel. In preformed Lay-Set construction it is offered for use on draglines, scrapers, shovel hoists, alushers and similar applications.

Explosives Bags

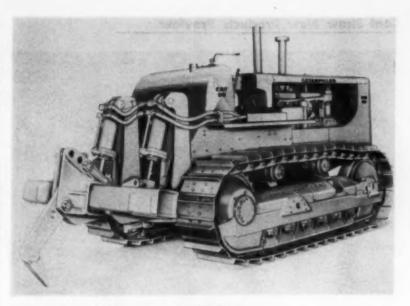
Development of a new explosives bag for packaging industrial explosives mixtures is announced by Bemis Bro. Bag Co., St. Louis, Mo. The bag is constructed of a three-ply Flexiply (multiply creped kraft paper) outer tube and a specially-extruded, pinhole-free seamless polyethylene liner. The poly liner, identified by a red stripe, can be safely heat-sealed through the outer Flexiply to provide waterproof closure. The outer tube provides the necessary strength. In use, a shock absorbing bag filled with shredded paper or other soft material is dropped into the hole first-if the hole is dry. The explosives bags are then dropped on the shock absorbing bag. The new Bemis bags have been submerged in wet holes for as long as 7 days without leakage.

Low-Cost Blasting Agent

Hercules Powder Co., Wilmington, Del., offers "Dynatex," an improved, lowcost, ready-to-use blasting agent. The new nitro-carbonitrate blasting agent combines excellent performance with economy, the company says, and in addition eliminates the operation of mixing blasting ingredients on the job.

Blasthole Charging Machine

Atlas Powder Co., Wilmington, Del., displays its "Jetloder" blow-charging machine for blowing ammonium nitrate and fuel-oil mixtures into horizontal blastholes in stripping operations. Other new developments to be shown by Atlas are Giant "75" primers, blasting core tubes and "Ganite" blasting agent.



Improved Heavy Bulldozer

Caterpillar Tractor Co., Peoria, Ill., introduces the Series H D-8 direct-drive, torque-converter tractor with a new line of matched tools. A new No. 8 ripper, incorporating a 5-position clevis and tooth is one of the tools. The prime production feature of this more durable tool is its ability to more closely match ripping angles to varying materials. The

mechanical components which make this possible are the three-hole clevis and high- and low-position holes in the tooth itself. Other new features of the tractor are redesigned hydraulic controls for faster, easier operation of the tools, and larger hydraulic cylinders for the tools to reduce working pressures, the company says.

Extra-Strength Wire Rope

Under the trade name "Double Gray" Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., offers an extra-high-strength wire rope for rotary rigs, shovels, draglines, scrapers, tractors and all other heavy-load services. Strength is approximately 15% greater than improved plow-steel rope with IWRC. Greater resistance to abrasion, wear and deformation also are noted by the maker.

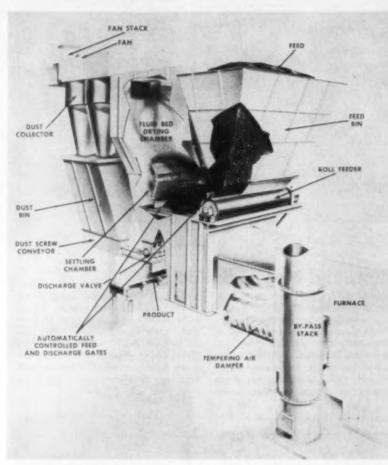
70-Ton Coal Hauler

Capacity of its new 90-cu yd coal hauler is 70 tons, notes the KW-Dart Truck Co., Kansas City 41, Mo. It is powered with a 450-hp V12 diesel engine with 4-speed transmission converter. The 32-ply tires on the driving and trailer axles are 18x33. The modern-design body, with air-controlled drop doors, employs T-1 alloy steel. Empty vehicle weight is only 78,500 lb, the company states. Gross vehicle weight is 218,500 lb.



Heavy Twin Crawler

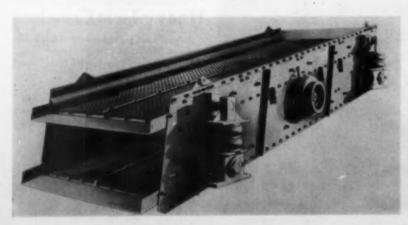
A number of improvements in the new series of the TC-12 "Twin" crawler tractor are announced by Euclid Div., General Motors Corp., Cleveland 17, Ohio. Most of the new improvements result in heavier, more-rugged construction and simplified servicing, the company says. The 402-hp Twin has been increased in weight from 64,000 lb to 67,000 lb, while an increase of 30% in the mechanical advantage of brakes has been accomplished. A typical change is the replacing of four oil-bath air cleaners with two of the dry type.



Fluid-Bed Dryer

Described by its builder as a simple thermal dryer using the latest in advanced techniques and equipment, the H & P Fluid-Bed dryer offered by Heyl & Patterson, Inc., Pittsburgh 22, is said, as a result of the fluidization principle, to increase thermal-dryer capacities to "a level impossible to attain with any other known drying method. The H & P Fluid-Bed dryer is capable of drying

a wide range of coal sizes—from 1½ in to zero." Capacity ranges up to 4 tph per square foot of grid area. Other features cited by Heyl & Patterson are: almost complete elimination of degradation; no internal parts and unitized construction for reliable operation and low maintenace; uniform drying time and results for the entire output; ability to use high-temperature gases as a result of natural size stratification in the drying chamber.



Rod-Type Screens

New rod screens introduced by the Bixby-Zimmer Engineering Co., Galesburg, Ill., include the "Twist Rod" for better dewatering in extremely difficult cases, according to the company. The "Flex Rod" screen is designed for sizing, particularly on flat vibrator decks where the material may tend to stick with conventional screen openings.



Preparation-Plant Elevator

"Minicage," a small, low-priced preparation-plant elevator, made by Connellsville Mfg. & Mine Supply Co., Connellsville, Pa., is designed to be installed on the outside wall of existing plants or to be incorporated in the interior design of new plants. Available as a complete package, including a hoist to be mounted at the top of the structure, the tower cage, wire ropes, controls and buffers, the standard Minicage has floor space 3x4 ft. Designed to comply with all mining laws, it will lift one or two men and equipment and supplies in the range of 1,000 lb and up.

Air-Sprung Screens

"Quiet in operation and easy to install," air springs developed for "Ripl-Flo" floor-mounted vibrating screens by Allis-Chalmers Mfg. Co., are also said to afford maximum insulation of vibration. "When handling feed containing large quantities of water the screen equipped with air springs can be readily adjusted to weight differences. The springs are easy to inflate and are not affected by water."



Vibrating Screen

For heavy-duty high-capacity operation the Nordberg Mfg. Co., Milwaukee, Wis., offers the Symons Rod-Deck vibrating screen. Outstanding features pointed out by Nordberg include: patented screen surface of individually replaceable oil-tempered spring-steel rods; effective adjustable vibratory action; heavy-duty construction, easy accessibility of parts; low maintenance costs and ability to handle heavy dry or wet feeds at high capacities on comparatively small openings without blinding or plugging.

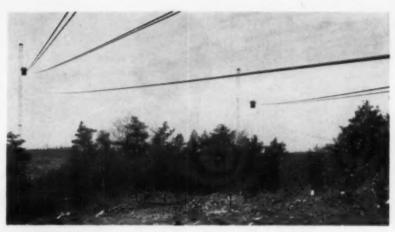


Big Feeder from Tractor Parts

The new FD-4 heavy-duty feeder, made from parts of a popular crawler tractor, is introduced by Pettibone National Iron Co., Duluth, Minn., a division of Pettibone-Mulliken Corp. Special features are interchangeable parts between tractor and feeder, even feed of materials to belts or crushers and shaftmounted reducer. The shaft-mounted reducer eliminates a countershaft, open gearing and their attendant lubrication needs. Standard final-drive gearing from the tractor is used in the speed reducer. Various deck speeds are achieved through the use of different reducers.

Heavy-Medium Cyclones

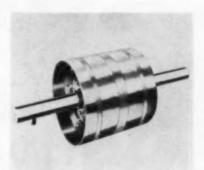
Roberts & Schaefer Co., Division of Thompson-Starrett Co., Inc., Chicago, Ill., unveils the Dutch State Mines heavy-medium cyclone, an entirely new method of cleaning fine coal in the U. S. Typical flowsheets of the process also will be featured.



Reversible Tramways

A completely automatic high-speed reversible tramway is now being featured by Interstate Equipment Corporation, Elizabeth 4, N. J. The new development,

the company notes, also includes the equipment necessary to convert existing reversible tramways to automatic operation.



Centrifugal Screen

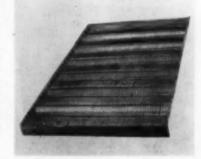
A new line of coal screens will be featured by Cross Perforated Metals Plant of National Standard Co., Carbondale, Pa. "Conidure," a centrifugal screen being introduced for the first time by Cross, provides from four to eight times longer life than conventional screen plates, the company says. New "Rima" and "Rimetta" wire screens and Cross Perforated metal screens also will be introduced.

Permanent-Magnet Pulley

Indox V, a high-energy ceramic material, is used in the magnetic pulley featured by Stearns Magnetic Products, Valparaiso, Ind. Equal in strength to many electromagnetic models, the new pulley can be used with deep conveyor burdens and at high belt speeds for tramp-iron removal. The material is also used in a drum separator for magnetite-reclamation service. Low cost is one of the outstanding advantages.



Wedge Wire Corp., Wellington, Ohio, announces "Taper-Slot" screen in which the opening or slot gradually increases from loop to loop. This new design enables materials that would normally lodge between the wires to be transported with the flow of the mass to the larger opening of the tapered slot. At this point the material either passes through the screen or becomes loose. In addition the "dip" created by wedge-wire construction frees oversize material and allows it to continue on with the material flow.



Higher Screening Capacity

A new type of screen that can sharply increase screening capacity is a product of Hendrick Mfg. Co., Carbondale, Pa. Called "Cascade" this new screen employs a step construction that breaks up the flow layer and promotes a tumbling action over the wedge-shaped wires. This feature permits up to twice as much slurry and fine coal to be fed into the Cascade without flooding, the company says. Furthermore, smaller screens can be used for a given capacity.



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Nowhere is this exacting attention to quality more rigorously followed than in the production of Wickwire Rope. That's because a quality rope is a safe rope. It helps the user eliminate losses due to injuries or wrecked equipment that can result when a "bargain" rope fails.

Wickwire Ropes are available in a complete range of sizes, constructions and grades—including Wickwire Double Gray extra-improved plow steel rope for your extra high strength rope requirements.

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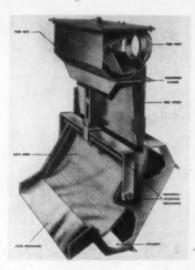
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6631



Wet Screen

For wet classification of fine coal, Heyl & Patterson, Inc., Pittsburgh 22, offers the H & P Sieve Bend-a stationary unit with bars across the downward flowing stream of coal and water. Advantages cited by the company include good screening efficiency, no motor required for screening, relatively small floorspace requirements and low maintenance.

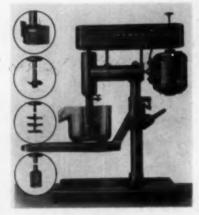


Volatile Analyzer

Automatic volatile-matter determination by either of the two methods ("sparking" and "nonsparking" coals) called for in ASTM Method D271-48 is possible with the Leco unit shown in the accompanying illustration and manufactured by Laboratory Equipment Corp., St. Joseph, Mich. Dual furnaces are the key, with independent temperature control. The furnaces also are available separately with or without controls and pyrometer so that the central control system can be added at any time. The unit operates on 115-V single-phase 60cycle current.

Hydraulic Classifier

A highlight from Dorr-Oliver, Inc., Stamford, Conn., will be the Dorrclone hydraulic classifier equipped with the new Siphontrol underflow control which automatically compensates for feed variances, providing uniform underflow density without instrumentation. This new development is applicable in fine-coal cleaning, water-clarification and refuse circuits where uniformity of separation is required despite widely varying feed composition.



Laboratory Flotation Cell

Wemco-Fagergren Mineral-Master is a versatile laboratory unit with interchangeable parts to perform a variety of laboratory work in flotation, attrition and agitation, according to an announcement by Wemco Div., Western Machinery Co., San Francisco 7, Calif.

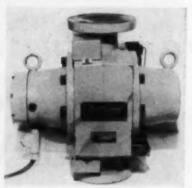


Vibration Inducers

A new, high-amplitude vibration inducer the "Vibrolator CCVP," starts materials moving and keeps them flowing during the unloading of railroad

cars and hoppers. The unit is portable and is equipped with its own mounting clamp by which it can be mounted in any convenient position or angle. The Vibrolator is air-driven. Vibration can be precisely controlled at any frequency from a few cycles to more than 60 cycles per sec. Also included is a line of new mounting brackets and systems.





Density Measurement, Tank-Level Indication

Continuous accurate measurement of the density of liquid-solids or air-solids mixtures in pipes or separating vessels is provided by the AccuRay density-measurement system developed by Industrial Nucleonics Corp., Columbus 12, Ohio. Based on the principles of gamma-ray transmission from a radioisotope the system makes no contact with the flowing material, such as slurry to a flotation plant. Measurements also are independent of flow rate and pressure, and among other things provide accurate data for the control of washers, flotations units, etc.

A major feature of the company's new AccuRay tank level detector-controller is that there is nothing in the tank itself. Thus, it is noted, it is completely free of fouling and is readily accessible for maintenance. In addition, the instrument can fail safe for either the high or the low-level signal.

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(Continued on p 172)



Newest Lima, Type 64-shown here with 22-ft. boom, 18-ft. handle, 11/4-yd. dipper. 2 and 21/4-yd. coal loading dippers available.

The rugged new Lima Type 64 fills a definite need for a heavy duty 1¼-yd. shovel, 40-ton crane, dragline and 1¼-yd. pullshovel that will combine dependable high performance with low maintenance costs, for maximum profit! The new type 64-SC with extra long, wide crawlers is designed for special crane service. This new Lima has a capacity of 50 tons on a 40' boom at 10' radius.

Lima Quality Features

You get these, and many more, Lima quality features in the 64 and 64-SC; precision-machined teeth on heat-treated alloy steel gears; long-lasting, trouble-free anti-friction roller bearings; safe, sure band brake and jaw clutch power steering; splined shafting; extra-large-diameter hoist, crowd swing and propel clutches; independent planetary boom hoist.

Crawler truck base is strong one-piece alloy steel casting with integral machined ring gear and flame-hardened roller path. Rotating base is one-piece carbon steel casting, built to absorb severest shocks of hard digging. Center pin is relieved of strain by six hook-type conical rollers tapered to revolve naturally around double-flanged roller path.

Like all Limas, the 64 and 64-SC are good travelers. Strips down easily for haulage. Side frame assemblies, complete with treads, are simple to remove. Ledge mounted, one-piece rear counterweight can be easily removed. When equipped

for crane service, folding or telescoping gantries can be lowered to cab height for low clearance.

Designed to Outperform

Service is easy, every part readily accessible. Simplicity of power transmission design lessens friction, reduces upkeep, and delivers more power. Torque converter prevents engine stall, cushions shocks to operator and machine, increases performance by building up line pull.

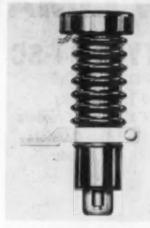
Learn more about the Type 64 and 64-SC, newest members of the Lima family of high-performance construction equipment The Lima line includes shovels to 6 cu. yd., cranes to 110 tons, draglines variable. Write or see your Lima distributor now.

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Arresters, Capacitors for Power Lines

New electrical equipment introduced by Ohio Brass Co., Mansfield, Ohio, includes the Varex capacitor and the Thorex lightning arrester. The Varex unit is designed for power-factor correction and the Thorex for lightning protection of substations, rotating machinery, and transmission lines.

Multi-Belt Drive

New Poly-V drive consists of newtype belt with specially-designed pulleys to mate with the ribs in the belt, according to Manhattan Rubber Div., Raybestos-Manhattan, Inc., Passaic, N. J. This eliminates matching, provides greater strength, maintains constant pitch diameter and speed ratios, saves space and reduces wear.



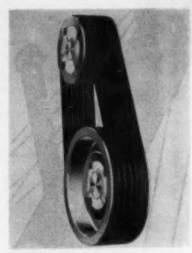
Rubber-Lined Pump

Reliable performance and low power consumption are cited for its rubber-lined pump by Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. New design features are aimed at easy inspection and maintenance and reduced downtime. Built to handle abrasive fine-mesh material (¼-in round to 325M), the pump is available in capacities from 10 to 3,000 gpm at heads through 140 ft with open or enclosed impeller.



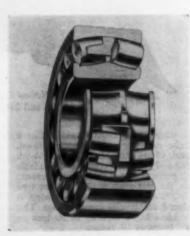
Solid Rubber Tire

A solid rubber tire with a built-in cushion that wears three times as long as pneumatic industrial tires is now available in a size that fits yard trucks, front-end loaders, shovel loaders and other types of industrial vehicles, according to Mechanical Goods Div., United States Rubber Co., New York 20, N. Y. The new size is 25x6x15%. The tire, called U. S. Royal Mine Cushion, is made of hard rubber on the outside with a cushion of softer rubber inside. It was originally introduced for shuttle cars in coal mines. The new tire has a wider, flatter tread that gives greater flotation and compaction, and is made of a tougher compound for greater cut- and chip-resistance, according to the maker.



V-Belt Drives, I to 1,500 Hp

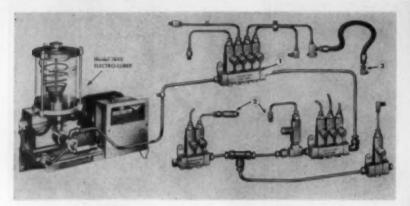
Dodge Mfg. Corp., Mishawaka, Ind., announces an entirely new line of high-capacity, small-size V-belt drives, the Dodge "Dyna-V," featuring more power in less space. The new Dyna-V belts are higher in strength and reduced in dimensions. The sheaves have been redesigned to take full advantage of modern improvements in alloys. The sheaves are equipped with Dodge Taper-Lock bushings, which provide high holding power and easy disassembly, the company says.



Screen Bearing

To meet the needs of modern vibrating screens, SKF Industries, Inc., Philadelphia 32, Pa., offers the spherical-roller screen bearing. The design, SKF notes, provides high load-carrying capacity (37% higher than the original bearing and long fatigue life (2.85 times). It also provides a cage that permits the bearing to operate at combined high eccentricity and speed. It is offered for use in new screens and as a replacement in old.





Automatic-Lubrication Equipment

Fully automatic and electrically operated, two new centralized-lubrication systems, called "Electro-Luber," are introduced by Lincoln Engineering Co., St. Louis, Mo. The systems are designed to provide high- or low-pressure centralized power lubrication for industrial machinery. An outstanding feature, says Lincoln, is a safety shut-off that operates automatically if the pump runs

dry or a supply line breaks. Also to be featured by Lincoln Engineering is a new line of heavy-duty Power Master lubricant drum pumps, air-motor operated for either 400- or 120-lb drums. This line offers four different air motors and five pump tubes to provide 19 power ratios. Lincoln also offers a new line of air compressors which will be featured at the show.



Suspension Without Crossarms

Low cost is cited as the major feature of Roeclamp, introduced by the Electrical Wire Div. of John A. Roebling's Sons Corp., Trenton 2, N. J. It consists of a plastic spacer with three insulated cables, all suspended from one messenger. Crossarms are eliminated. For coal mines, Roebling notes that the development is especially adaptable for distribution lines to substations, portals, preparation plants and the like. It saves up to 60% compared to the conventional self-supporting cable, according to information from Roebling.

Resin Bolt Anchorage

To facilitate roof-bolt installation by its Air-Seal resin process, which it notes provided positive, permanent anchorage, Pattin Mfg. Co., Marietta, Ohio, offers a redesigned resin package, featuring the catalysts in a small tube and the resin in a large one with adequate room for mixing the two. As a result, the company notes, mixing has been simplified, simplifying resin setting for "a perfect bond between the bolt head and the strata. Announced a few months ago, the Pattin Air-Seal process permits safe bolting of soft, falling mine roofs, and permits roof-bolting to be done in areas where ordinary bolting is impracticable and in mine openings which must remain open for many years.

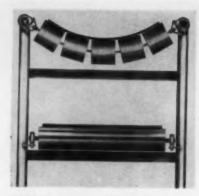




Speed Changers And Reducers

The "Vari-Tex" speed changer offered by Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., features a 4-position motor and 2-position gear mounting for horizontal or vertical operation. Smooth, instant speed variation is provided. Other features noted by Allis-Chalmers include: one-piece motor and driver shaft supported between end bearings to reduce shaft deflection and increase efficiency, low weight and reduced size per horse-power, "in-service" lubrication, large case openings for easy access, easy-to-read speed indicator, and splines in all disks and shafts.

Complete enclosure marks the design of the "Shaftex" shaft-mounted speed reducer offered by Allis-Chalmers in sizes up to 40 hp with nominal ratios of 5:1, 15:1 and 20:1. Backstop and overload releases may be included. The "Shaftex" reducer usually is driven by a fixed-pitch-diameter "Texrope" drive. Variable speeds may be attained by either a stationary control or "Vari-Pitch" sheaves. Flexibility and simplicity, according to the company, provide substantial space and weight savings.



Belt-Conveyor Idler

McNally Pittsburg Mfg. Corp., Pittsburg, Kan., has developed a new belt-conveyor idler for smooth, quiet operation that represents a significant improvement, the company says. The Mc-Nally Pittsburg "Cradle Idler" consists of 5-in rubber rollers assembled on precision-ground ball bearings. The inner race of the bearing is pressed on a steel-sleeve spacer equipped with lock nuts. These individual rubber rollers are mounted on a flexible, non-rotating stainless-steel wire rope. The number of idlers varies with the width of the belt. one roller for each 6 in of belt width plus one roller. The non-rotating rope of each idler is attached to a U-clamp through a simple ball joint to provide flexibility. The idler always hangs vertically, regardless of the incline of the conveyor, and it possesses high shockabsorbing qualities. Easy moving of the ends for belt training is also a feature.

Industrial-Battery Plates

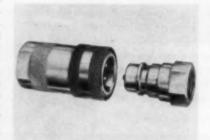
Improved battery performance at lower cost is the major benefit pointed out by Industrial Div., Gould-National Batteries, Inc., Trenton, N. J., in introducing the new "Siliconic" plate for motive-power batteries. All models of the "Thirty," "Kathanode," and "Super Dreadnaught" lines will be available with the new grid which is made possible by the patented process of introducing arsenic and silver-cobalt sulfates into the active materials of positive plates to prevent grid separations. Life is increased from 10 to 25% with improved electrical characteristics.

Floating Suction Strainer

"Rugged and simple" and "virtually unsinkable and incorrodible" are two features cited for the Dolphin floating suction strainer by Megator Pumps & Compressors, Inc., Pittsburgh 12, Pa. Its design insures that the water is drawn from just below the surface. avoiding sand, silt and floating trash and preventing cavitation and vortex formation.

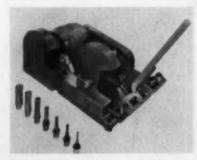
Multi-Point Lubrication

Trabon Engineering Corp., Solon, Ohio, will exhibit its new intermittent "Multizone" centralized lubricating system. Multizone, a single-line system enables a great number of bearings interspersed over a large area to be lubricated from one or more central stations. Hundreds of bearings receive measured amounts of lubricant at the precise time needed. Manual or automatic controls with single indication at each zone of bearings are features. Multizone increases bearing life, lowers maintenance and power costs and is dirtproof. The system handles oil or grease. Trabon will also exhibit its new and improved spray panel for gears.



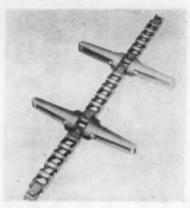
Push-Pull Coupling

Aeroquip Corp., Jackson, Mich., now offers the push-pull Golden Flow coupling in ½- and %-in sizes for operating pressures up to 3,000 lb.



Skiving Machine

Cutting and skiving hose is eased and made more efficient by the new CS-75 cutting and skiving machine made available by the Weatherhead Co., Ft. Wayne, Ind. It is equipped with a new steel-serrated cutoff wheel that will cut any two-wire-braid hose from % to 2% in ID. A carrier locks the hose in place and spreads it as it is cut, preventing binding and blossoming. The unit will skive hose from % to 1% in ID. Quick-change snap-in mandrels are furnished in a range of sizes. Motors are 1%-hp 220/440-V 3-phase or 110/220-V single-phase.



Mine-Chain Renewal

Possible savings of up to 30% compared to new chain costs are cited by the Whitney Chain Co., Hartford 2, Conn., as the major advantage of its "Mine Chain Renewal Program," offered through its mine-chain distributors. Whitney's detachable flight design, the company notes, permit complete renewal without the expense of replacing the long-wearing flights. The chain, after inspection and replacement only when necessary, is carefully assembled with factory-new sections, flight studs and nuts, using factory torque specifications. Free pickup and delivery service is provided by the Whitney chain distributor.



Maintenance Kit

Fast permanent repairs to damaged and stripped threads are possible with the Shop-Pack kits offered by the Heli-Coil Corp., Danbury, Conn. The use of inserts, the manufacturer points out, replaces less efficient repair methods. Available in 29 different sizes, each Shop-Pack contains a quantity of inserts, tap and inserting tool. Sizes range from 6-32 to 1½-6 in the N.C. series and 6-40 to ½-20 in the N.F. series. Inserts for left-hand threads also are available in two common sizes: 7-6-1/-16-20 and ½-20; also 14-1.25 and 18-1.5-mm sparkplug threads.

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Stocks of Super Service cables are maintained at a General Cable distributing center handy to your location. The brochure showing the basic types and sizes may be obtained at any of the 65 General Cable Distributing Centers.

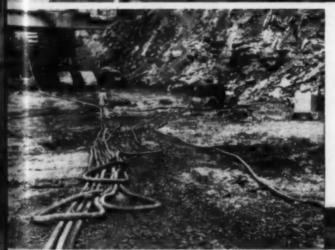




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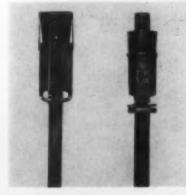
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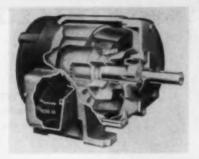
Flexible Ventilation Tubing

"Flexipipe" ventilation tubing, colored yellow for high visibility, is a development of Bemis Bro. Bag Co., St. Louis, Mo. Simple to install, Flexipipe is only from one-tenth to one-fifteenth the weight of metal tubing, and it resists acid mine water, oil, grease and abrassion. The tubing requires minimum maintenance and can easily be dismantled and reused. It stores compactly and is mildew-proof, even when stored wet. The tubing is made of neoprene-coated nylon fabric.



Expansion Shells

"Top-Tite" expansion shells, made by Thompson Products, Inc., and distributed exclusively by National Mine Service Co., Pittsburgh, Pa., are said to have several built-in advantages. The fine-tooth leaves transfer the bolt load without damaging the material in the hole wall, and insure load-carrying contact for the entire leaf area. The leaves are strengthened by a large plug, they won't break during insertion, nor will they cock or become misaligned when forced into dog-legged holes. One-piece construction of the leaf prevents separation of plugs from leaves.



Resin and Silicone Motors

Open-type motors with "Poxeal" and "Silico-Flex" insulations can be used in most applications previously requiring costly enclosed designs, declares Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. For motors using random-mound coils "Poxeal" epoxy-resin insulation results in a stator "completely impervious to moisture and fully resistant to attack by oils, solvents and most chemicals." in addition moisture, dirt, oils and other contaminants. Larger Allis-Chalmers motors of this type use the "Silico-Flex" insulation system, "which exceeds Class H temperature standards. Silicone rubber, vulcanized into a homogenous mass, forms a flexible moisture- and heat-resistant void-free dielectric barrier around coils, connections and leads." The two motors are available in all integral-horsenower frames.

Battery and Charger

Four new batteries in the Type TC Exide-Ironclad battery line are offered by the Exide Industrial Div., The Electric Storage Battery Co., Philadelphia, Pa. Features cited by the company include: a significant increase in the amount and variety of work done in a shift; a reduction in charging frequency -from twice to once a day in some 16-hr operations, and from three to two for some three-shift operations; more opportunity for standardization on battery types and greater interchangeability as a result of higher volume; and, in some instances, a reduction in size of battery employed with weight savings of up to 15%. The four new batteries include two conventional locomotive and shuttle-car models replacing four previous types, and two special designs for locomotives and other applications.

New vertical motor-generator chargers for industrial-truck batteries can be mounted off the floor and even on the floor, the company notes, save approximately two-thirds of the floor space. Four different physical sizes provide 25 different ratings.

Pipe Fittings, Tools

"Plainlock" couplings and fittings, lightweight couplings for plain-end pipe, comes with stainless-steel insert pipe grips to provide a fast easy way to join pipe without requiring end preparation. A positive mechanical lock is provided, says the maker, Victaulic Co. of America, Elizabeth, N.J. Also to be featured by Victaulic is a new field tool which automatically cuts off pipe end and grooves pipe, in the 2-4-in range, in one operation.

Insulators and Rectifiers

A new insulation for electrical apparatus and a 500-kw portable silicon rectifier will head the display of equipment by Westinghouse Electric Corp., Pittsburgh, Pa. Also included will be a 50-kw mine-type rectifier, a line of AC and DC motors for mining applications, a mine-type power center, Load-O-Matic hoist control and Moduline speed-reducing equipment.

Air Service

The Weatherhead Co., Ft. Wayne, Ind., offers a new air-service package including everything needed to put together dependable efficient air-service assemblies for any line needed in mine or shop. Among the elements are the new Weatherhead blow gun with pushbutton control and nozzle tips for all requirements; new Weatherhead line of quick-disconnect ends; and new Weatherhead push-on stay-on Barb-Tite hose ends in sizes from ¼ through ¾ in in eight styles, plus Barb-Tite hose in either fiber or rubber liquid.



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Rubber Suspension for Mine Cars

"National" rubber load-suspension devices are announced by National Malleable & Steel Castings Co., Cleveland, Ohio. These devices give added protection to mine cars being loaded or unloaded and while in transit.



Electronic Measurement

The Model 4 "Geodimeter," product of Geodimeter Co., New York, N. Y., quickly and accurately measures distances of 50 ft to 3 mi electronically. The instrument is relatively small, light in weight and low in cost, the company says.



Pulley Lagging, Conveyor-Belt Repair

"Lag pulleys right on the conveyor," says the General Splice Corp., S. Norwalk, Conn., in discussing its Minet pulley-lagging method. The Minet lagging kit contains all the necessary materials for cold-bonding neoprene sheet to steel pulleys without bolts or screws. Advantages cited by the company include: no downtime, easy application without special tools, longer lagging life, and convenience.

Describing it as a "universal belt-repair method," General Splice Corp., S. Norwalk, Conn., offers the Minet repair kit incorporating Minet putty for minor damage, Minet cover stock and Minet ply stock. The aim, the company notes, is to provide a universal method permitting the belt to be made ready for service immediately on the job without removing the belt and with a minimum of tools, materials and labor. Necessary tools are available in a separate kit for making belt repairs and splices in the field, the company says.



Motor Drives

Reliance Electric & Engineering Co., Cleveland 17, Ohio, will display a variety of new units, including the "Super T VS Drive" shown above. The new packaged system boasts a 35% size reduction over comparable units in the range from 3 to 350 hp. The Super T VS will commutate up to 200% of rated current for one-minute periods and will handle even higher transitory peak loads. Reliance will also show new motors in explosionproof and open frames for surface and underground applications, and a new Super T VS Junior drive for fractional-horsepower applications, such as on welding positioners, small conveyors and so on. Also to be featured is a new line of Duty Master explosionproof and dustproof motors which are available in ratings from 1 to 1,000 hp. and other Bureau of Mines-approved motors.



Improved Electric Cap Lamp

New battery design and krypton gasfilled bulb with two equal working filaments account for 30% more light from the Wheat "National" electric cap lamp. Distributed by National Mine Service Co., Pittsburgh, Pa., the new lamp can be easily focused without tools by turning a switch knob. The new-type battery is more highly resistant to vibration and hard use, features more active material and greater accessibility of electrolyte to active material. In addition, the cord now passes over the crown of the protective cap for better balance.

Cable Sheath, Insulation

For almost any cable installation, including aerial applications, industrial distribution and direct burial, Simplex Wire & Cable Co., Cambridge 39, Mass., offers C-L-X continuous lightweight metallic cable sheath corrugated for flexibility. "In place over a wide variety of Simplex installations and constructions it forms a completely closed system impervious to gases, chemicals and water."

Simconex is the new silicone insulation offered by Simplex. "It is ideal for use in cable installations where extremely high temperatures prevail. Among its outstanding characteristics are retention of flexibility at very low temperatures, resistance to moisture and virtually complete immunity to ozone and corona."

Improved Fire Hose

"Diamond Brand" fire hose, a new product of Goodyear Tire & Rubber Co., Akron, Ohio, features all-Dacron construction. Flat-cured with an extruded neoprene tube, the new hose is being made with a white single jacket and single neoprene impregnated jacket in black, red and yellow at 500-lb test, and in white double-jacket at 600-lb test.



New-Design Wire Rope

Christened Roebling Herringbone, the newest addition to the Roebling wire-rope family is described as a new concept in wire-rope design. It is a combination of regular- and Lang-lay types specially fabricated to maintain regular-lay's structural stability with the flexibility and abrasion resistance common to Lang-lay. Users, Roebling notes, report "greatly increased service life."

(Continued on page 180)

Get the Answer to Fluid Line Problems in Booth 2604 at the Coal Show...



Let Hose Line Specialists in the Aeroquip Booth Show You New Flexible Hose Lines with Reusable Fittings Can Cut Costs, Save Time

See how hose lines can be assembled in minutes using Aeroquip Hose and Reusable Fittings. See Aeroquip's new Cut-off Machine and Assembly machine in action. Find out how a small, portable inventory of Hose and Fittings meets all replacement needs, gets equipment back on the job quickly. Both equipment operators and manufacturers will find this cost-cutting, time-saving demonstration of interest. Also on display will be Self-Sealing Couplings, Clamps and Straps. Remember to stop at the Aeroquip Booth . . and to call your nearby Aeroquip Distributor for hose line service.

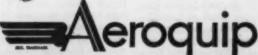


1509 and 1508 High Pressure Hese and Reusable Fittings for hydraulic and pneumatic applications up to 5000 psi. Sizes from 1/4" to 2".

1503 and 2651 Medium Pressure Hose and Reusable Fittings for fuel, lube oil, air, water and hydraulic lines up to 3000 psi. Sizes from "4" to 3".

1525 and 2536 Law Pressure Mose and Reusable SOCKETLESS Fittings for fuel, lube oil and air lines up to 250 psi. In sizes from 1/4" to 3/4".

SOCKETLESS is an Aeroquip Trademark



AEROQUIP CORPORATION, JACKSON, MICHIGAN

PIDUSTRIAL DIVISION, VAN WERT, OHIO • WESTERN DIVISION, BURBANK, CALIFORNIA AEROQUIP (CANADA) LTD., TORONTO 19, ONTARIO

SOCKETLESS Fittings are covered by U.S. Patent Number 2,805,088 and Carresponding Foreign Patents and Patent Applications

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD



Metal-Removal Torches

New tools for use in the patented Arcair process of metal removal are now offered by the Arcair Co., Lancaster, Ohio. The process involves an electric arc to melt, and compressed air, to remove the liquefied metal. Auxiliary equipment is a welding machine and an ordinary shop air source. Because the process does not depend on oxidation it can be used on any type of metal, the com-pany points out. "It will quickly cut, bevel or gouge stainless steel, cast iron and hardfacing alloys." Heat input is approximately 150 deg per pass. Both manual and automatic models are available, including the H-2 torch for light infrequent service and the H-3 for general-purpose work.



Welded Sprocket Rims

Kensington "Weld-On" sprocket rims offer the simplest, most economical way to renew worn sprockets on crawler tractors, says Kensington Steel Div. of Poor & Co., Chicago 28, Ill. The rims are cast of an alloyed manganese steel specifically developed to resist wear under extremely abrasive conditions. This metal also has a work-hardening characteristic which develops additional surface hardness when exposed to impact, wear and shock. Teeth on these sprocket rims have been reshaped to provide full bearing against the link, thus distributing operating stresses evenly throughout the root of the teeth.

WILFLEY

SAND PUMPS

20 years service! REPAIRS?... ONLY ONE RUNNER!

A Wilfley customer reports the following:



"The pump operated trouble free until the winter of 1953. I believe one new runner was installed on this pump during this 20 year period.

It was not placed in operation, but was stored outside for nearly 4 years until the spring of this year, 1958. In March of this year the pump was checked in our own shop. It was found that a new water-seal and a new runner was all that was needed to put the pump in operation."

Year after year Wilfley's reputation for dependable, low-cost pumping continues to build.

Individual engineering on every application.

DENVER, COLORADO, U.S.A., P.O. BOX 2330 . NEW YORK OFFICE 122 EAST 42ND ST., N.Y. CITY 17

Depreciation Reform -

Why Industry Needs A Modern Tax Policy

A shockingly large proportion of our industrial plant and equipment is obsolete. As indicated by an earlier editorial in this series, over \$95 billion would have to be spent—and spent soon—to bring our industrial facilities up to the best modern standards. Yet plans for 1959 call for little more than \$30 billion of actual spending—barely enough to make a start on this backlog of modernization.

At the heart of the problem of obsolescence is a federal tax policy that discourages business from replacing inefficient facilities. It is the purpose of this editorial to spell out a tax reform Congress can make this year—with little cost in terms of tax revenue—that would go a long way toward removing the barrier to modernization of plant and equipment. This reform is a more realistic system of tax deductions for depreciation and obsolescence of productive facilities.

A Barrier to Modernization

Industry abounds with examples of old and obsolete facilities—despite large expenditures made in the past few years. Two-thirds of our metalworking equipment is over ten years old. Over half the capacity of our chemical process industries was installed before December 1950. Only a minor fraction of our railroad freight moves in new freight cars or the new pushbutton freight yards.

The tax law bears a large part of the responsibility for this lag in modernization because of its important influence on business investment in plant and equipment. For many years the tax law has permitted as a deduction from income "a reasonable allowance" for wear and tear and obsolescence of productive facilities. These annual deductions affect business investment in several ways.

- They are the way a company recovers its investment in plant and equipment.
- They determine in large measure, the amounts of money that are spent each year to replace and modernize facilities.
- Furthermore, the schedule for depreciation often determines when a specific machine or building is actually replaced.

The law requires that depreciation deductions be spread over the "useful life" of a building or machine. But the periods of useful life for tax purposes today still depend heavily upon tables drawn up by the Treasury almost 20 years ago. These tables reflect the replacement practices of depression years. Also, they were compiled at a time when the pace of technological progress in industry was much slower than it is now. For nearly all types of equipment the indicated period of useful life is longer—sometimes much longer—than most experts consider realistic at today's rate of technological advance.

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The result of these outmoded depreciation schedules is that the recovery of investment is dragged out, and the replacement of obsolete equipment is delayed.

In The Right Direction

Congress should establish, by law, the right to use shorter depreciation periods on productive equipment. It should do so in a way that would free industry from obsolete concepts of the rate of technological change and would provide incentives to install new equipment and produce new products.

The tax reform act of 1954 made some progress in this direction—but not enough. It introduced new methods for calculating depreciation—the declining balance and the sum-of-the-years' digits—which enable a business to recover most of the investment in a new facility in the early years of its useful life. However, these new methods do not accomplish their desired purpose when the supposed "useful life" is still an unrealistically long period of years.

Industry is by no means free from blame for the failure to bring depreciation policy into line with the needs of a modern, growing economy. According to Joel Barlow, president of the Tax Institute, "management has largely ignored the Commissioner's invitation . . . to come into the Internal Revenue Service office and make a case for shorter depreciable lives by establishing technological obsolescence."

The failure of many companies to see their own interest in more realistic depreciation not only holds them back from modernizing their own facilities but also lends support to the Treasury in its continued adherence to an outdated policy.

A Suggestion For Reform

An excellent model for reform of the depreciation policy in our tax law is the system used successfully in Canada for a decade. In Canada, all productive equipment may be depreciated at relatively fast rates assigned to each of 14 broad categories. The Canadian system permits depreciation up to twice as fast as the antiquated tables of useful

lives now followed in the U. S. It also gives the individual business far greater flexibility in determining depreciation schedules that fit its own needs and experience.

For example, in the category or "bracket" covering general machinery a taxpayer in Canada may depreciate up to 20% of the machine's value annually, on a declining balance basis. In the U. S. the fastest rate at which many types of machinery can be depreciated is only 10%. In other categories, from tools and dies to buildings and pipelines, the Canadian system also allows faster depreciation and provides greater incentive to invest in new facilities.

The cost of this reform in terms of lower tax revenue would be small—probably less than \$500 million in the first year. And even this would merely be postponed, not permanently lost. Indeed, there is a very good prospect that tax revenue would not suffer at all. The increase in spending for new plant and equipment resulting from this tax reform would mean an increase in wages and profits—and therefore in taxes—in industries that produce machinery and other capital goods.

A realistic tax policy on depreciation would provide a badly needed incentive for industry to replace obsolete and inefficient facilities with up-to-date plants and equipment. It would step up our rate of technical advance and economic progress. And it would put U.S. industry in better shape to meet the growing competition from other countries that have grasped the advantages of fully modern technology.

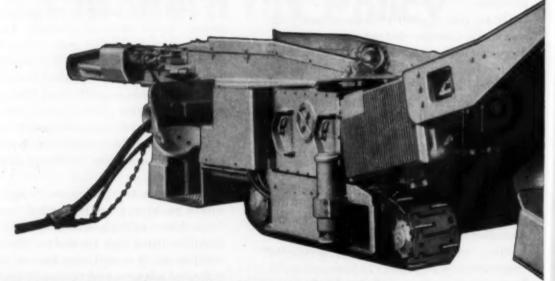
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Donald CMcGraw

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loading with advanced cutting techniques



- Continuous mining reaches spectacular new heights in operational efficiency with each of these new and exclusively engineered heavy duty Lee-Norse Miners.
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 to produce
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PRODUCERS FOR 1959

CM47X...mining 42 inch

to 10 foot heights



- A 24" flexible conveyor operates on hydraulically "no-clutch" gear motors applied to the gathering head.
- Controlled multiple tramming speed variable to 50 feet per minute, with "overdrive" at 90-100 feet per minute.

Again BOOTH 119 at the 1959 COAL SHOW



Lee-Norse Company

CHARLEROI, PENNA.

Specialists in Coal Mining Equipment

Coal high or low?... Ite MINERS keep production on the go!

Foremen's Forum



Maintenance is becoming more highly specialized with every passing day. The production foreman cannot know all the fine details of troubleshooting and clearance of outages, but he can understand his company's overall program.

NO. 1 GRIPE of mechanics and electricians: "Don't lean over my shoulder when I'm troubleshooting."

Maintenance Responsibilities Of Production Foremen

ONE OF THE MOST IMPORTANT things for a production supervisor to remember in his relationships with the maintenance department is this: When a machine has broken down, the unit foreman and his crew should not stand around making remarks and suggestions from the "peanut gallery" to the troubleshooter. The operator of the ailing machine may be useful to the troubleshooter, but the others usually are not. Nothing can be more disconcerting to the fellow who is trying to trace his way, logically, through a complicated print than comments from the sidelines. The repairman's logical approach to the problem will, in the long run, solve the problem in the shortest

In the meantime, the unit foreman can usefully employ his crew in doing necessary deadwork. There's always some of that to be done. As a matter of fact, when this work is done during machine downtime it cannot induce further delays later in the shift.

Only slightly less important than the foregoing is the matter of providing reliable information to the maintenance department when placing a call for maintenance assistance. With a little

practice a unit foreman can learn to pinpoint certain troubles. For example, he can differentiate between mechanical, electrical and hydraulic difficulties, and he may be able to isolate the trouble spot to certain general areas of the machine.

If he can do this, he should certainly be able to take the next step, learning the proper terminology of major assemblies and smaller parts of the machines in his section. There is a great big difference between a relay and a contactor. If an electrician brings one of these when he should have brought the other, the delay is extended just that much more.

The maintenance man at the other end of the telephone line is not a mindreader and he can't carry everything to the scene of a breakdown. The unit foreman should be as specific as he possibly can in reporting the nature and extent of the breakdown.

Maintenance Programs

Steps like the foregoing, when faithfully followed by unit foremen and other production supervisors, will help greatly in getting the most benefit out of the company's cash outlay for main-

tenance. Everyone knows, we presume, that as the degree of mechanization increases it must be accompanied by a corresponding increase in the parts-supply inventory.

However, providing spare parts is only one of the elements a coal company must consider in setting up and operating a maintenance department. The department must be manned by qualified supervisors and mechanics and electricians. Training for these men must be provided, if necessary. And it is usually necessary. A system of reporting breakdowns, downtime, inspection results, and so on, must be instituted in order to give direction and purpose to the maintenance program.

A division of responsibilities within the maintenance department must be worked out to make certain that all necessary functions are served and that repairs or overhauls will be performed at the right time and with proper tools and facilities available. Shops must be built and equipped; maintenance materials must be evaluated and purchased, and a plan for distribution and on-the-job storage of these materials must be made. A good maintenance program covers a broad band in the management





THE ONLY WAY to know a job is done is to see that it is done, properly and on time.

spectrum. For an insight into just how much is involved, production foremen should read the section beginning on p 148 of the Coal Age Mining Guidebook, Mid-July, 1958.

Section Maintenance

Having a well-planned maintenance program in effect, and supporting that program with the necessary funds, is a top-management function. However, the control of the program, which after all is what really makes it click, is a responsibility of all supervisors, including production bosses. Each has certain areas of responsibility.

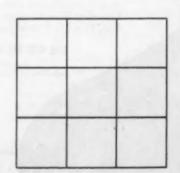
The unit foreman can perform a number of valuable services, better than anyone else, to make sure that the money invested in maintenance is stretched out to its maximum possible usefulness. Some of the possibilities are as follows:

1. Correcting bad habits among machine operators. Machinery abuse, unintentional or otherwise, can create a manifold maintenance problem. If an operator consistently runs the cutting head of a continuous-mining machine into the roof or bottom, it is his immediate supervisor's duty to correct this condition as soon as he sees it. That is one example. There are other possible abuses in the operation of shuttle cars, loaders, locomotives and all other mobile units.

2. Submitting complete, accurate reports, as necessary. After reading the "Maintenance Guidebook" in the Mid-July, 1958, issue of Coal Age, the reasons for and importance of periodic reports should be obvious. Even the supervisor's daily operating report, showing delays and the reasons therefor, provides a wealth of material which may be useful to the maintenance department in improving its services. Furthermore, if certain reports are to originate with equipment operators, the foreman should see that they, too, are complete and accurate.

3. Watching for evidence of low voltage. This is more important in a DC-powered mine. Low voltage in an AC-powered mine shuts the place down, and the foreman has little, if any, control over this. But in a DC mine, low voltage means excessive heat in cables and motors, which can lead to major troubles if the condition is not corrected. The unit foreman may not be able to do much more than report the trouble—but he should do that much.

4. Taking steps to conserve trailing cable. The high costs and lengthy delays resulting from laxity in trailing-cable maintenance are well known. Common-sense rules for employing and preserving such cables can be applied only in the section. The unit foreman is the only supervisor who can enforce the rules on not running over cables and suspending cables from hooks when this should be done. He should also



Try This . . .

Arrange the digits from 1 to 9 in the squares above so that the sum of each vertical column, each horizontal row and each diagonal is 15. There are a number of possible solutions. You will find one of them on p 210.

Try it—you'll find it not too difficult. But don't be surprised if next month's entry is tougher.



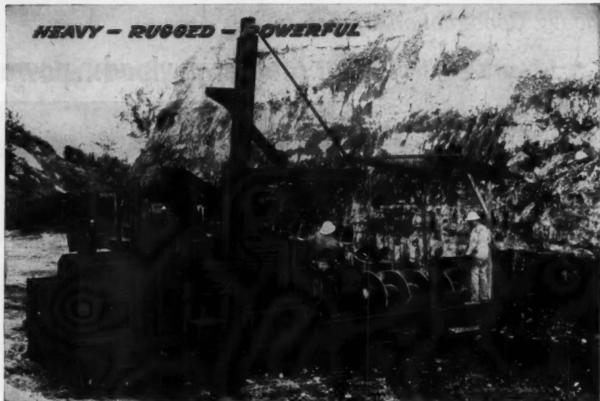
MAINTENANCE REPORTS and control systems are important. They should be accurate and complete.

inspect, at least daily, the anchorage of each cable to be sure the shock-absorbing attachment is in place and operating. He can note whether reel tension is correct, and report it if it is not. Furthermore, he can supervise the removal of new cables from shipping reels to make certain they are not twisted upon installation. He can also remind the men not to introduce twists when making splices.

5. Supervising lubricant application and storage. The foreman can be very helpful in making sure the job of lubrication is done, as it should be done, when it should be done. He can also see that lubricants in the section are stored in such a way that contamination will be minimized. There should be company rules governing lubricant storage; the foreman must see that they are followed.

6. Preventing waste of maintenance supplies. Excessive supplies should not be stored on the section. Too often the section advances far beyond these supplies and they are left to be covered up or forgotten. The unit foreman should know what is being brought into his section. He should call a halt when he sees any evidence of oversupply. This includes hydraulic fluid, lubricants, electrical supplies, seals and so on.

Thus it can be seen that section supervisors do exert a substantial influence in total maintenance costs. Acting in concert, they can save their company a lot of money. That makes everybody's job more secure.



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An Ohio miner removes 550 tons of coal in each 8-hour working day with this Model 15 36-42x12' McCarthy drill, operated by two men. He drills 42" dia. holes 144' deep. Auxiliary conveyor eliminates spillage at hole. It operates on either side of drill for working blind cut. Twelve different models of McCarthy Coal Recovery Drills mine !ow-cost "bonus coal"

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VERTICAL MODEL 106-24

World's Fastest Heavy-Duty Vertical Auger Drill

Bores faster, deeper, larger dia. holes than any other auger drill. New gear reduction unit slows auger rotation for operation in hard rock formations. Drills 8" and 9" dia, holes readily in shale and sandstone formations, drills larger dia. holes up to 24" dia. in softer formations.

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HORIZONTAL

MODEL 104

Lowest Drilling Costs per Foot, Self-Propelled or Truck-Mounted

Bores up to 12" dia, holes to 150' depth faster, cheaper than any other horizontal drill. Requires less working space, saves many man-hours... operates easily in tight, hard-to-reach locations.



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COAL AGE . April, 1959

Heavy Construction Operators

Go FORD-WARD for greater payload... power ..

"Our Ford trucks haul up to a ton-and-a-half more payload per trip"

says William R. Collins, V.P. William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can slways get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."

"We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas. NorthernImprovement Co., Fargo, N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road.

"Our drivers like Ford's power... they get heavy loads under way fast"

says George C. Wilson, General Superintendent Schultz and Lindsay Construction Co., Fargo, N. D.

"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

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LESS TO OWN...LESS TO RUN...LAST LONGER, TOO!





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`59 Ford Pickups Win Economy Showdown U.S.A.

-average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's %-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested — by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE							
'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gollon than Make	9.6% more miles per gallon than Meke 44G''	42.6% more miles per gallon than Make ⁴⁴ D ^{*†}	22.0% more miles per gallon than Make 44517	25.2% more miles per gallon than the everage of all makes	

The '59 Ford Sixes, in every test, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

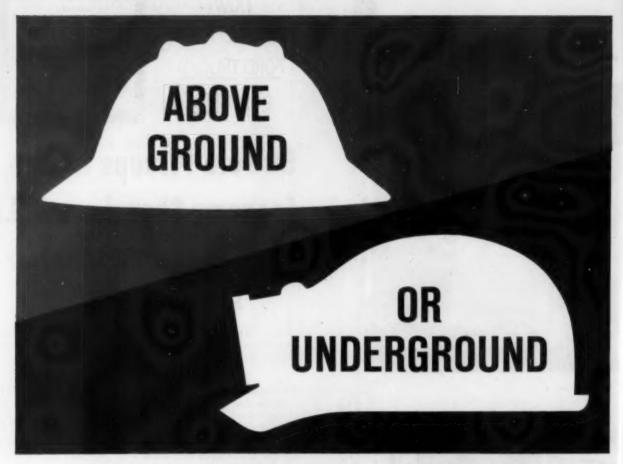
WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low-and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's Economy Carburetor is standard at no extra cost.

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?



Femco-Phone Systems for every mine need!

From one fixed location to another . . . between moving equipment and dispatcher . . . in your cleaning and preparation plants—wherever you need communications there's a Femco system to meet your requirements.

Femco-Phone systems include:

Trolleyphone 3000—The newest model of the first practical mine communication system for use between moving and stationary locations. Features microphone and loudspeaker conversation. Carrier system utilizes existing trolley wire or power line.

Loudspeaking Mine Telephones—For communication between fixed points underground. Two-way paging over loudspeakers saves time—brings you into immediate contact with the man you want. No ringing station after station. System is battery powered, 100% transistorized.

Wired Audio Systems—For cleaning and preparation plants, and for surface supervisory personnel. One central amplifier location . . . paging over wide areas . . . special four-wire communication cable . . . handsets or integral microphones. Desk and paging stations available.

Cagephones—For cage installations in deep mines. Separate or integral microphone and speaker units . . . low-voltage battery powered. FM carrier current utilizes hoisting cable or other existing wires.

Whatever Femco system you may install, you are assured of clear transmission, reliability, easy installation and low maintenance.

For more complete information on the individual Femco-Phone systems for all mining applications, write FEMCO, INC., IRWIN, PA.

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keep cables off the floor get longer cable life save money

FITS 1 1/2" CLOSE TO ROOF

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EASY TO INSTALL EASY TO REMOVE USABLE MANY TIMES PLAIN OR PAINTED

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Operating Ideas







NEW oil-dispensing building has steam-generating unit for fast cleaning of empty oil cans, floor and loading ramp.

New Facilities Cut Oil-Distribution Cost

NEW oil-dispensing facilities at Eastern Gas & Fuel's Keystone mine are cutting distribution costs while increasing safety. Efficiency begins on the surface where a new loading platform, oil house, two 8,000-gal elevated tanks and a cleaning shed were built. Steam cleaning facilities also are provided for keeping the fireproof structures and portable containers clean.

Two grades of hydraulic oil are purchased and stored in the elevated tanks. The oil house attendent starts his shift 2½ hr before mantrip time on the day shift. His first job is to remove empty hydraulic oil cans from a car placed in the sheltered area the previous evening. He removes six cans at a time and places them upside down at one end of a screen-plate counter to drain. At the center of the counter is a rigid vertical steam nozzle, which is operated by a foot pedal and by depressing the can over the nozzle. Two quick-acting valves are used for safety. The steam jet shoots up inside the can and cleans it thoroughly in about 20 sec. The can is then placed on the other end of the counter to drain. Only a few cans need to be cleaned on the inside.

The outside of each can is cleaned daily with a hand steam gun which has enough flexible hose to reach all corners of the shed. Additional steam connections are provided in the building so the ramp and floor can be cleaned, and, if necessary, snow melted.

Clean cans are put back in the supply car and filled with one of two grades of hydraulic oil. Filler hoses are suspended from the storage tanks and are long enough to reach anywhere in the shed. After the cans are filled the oil is charged out. Cars may be stopped at the platform above the structure where gear oil or grease can be loaded.

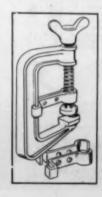
Hydraulic oils are distributed to the sections in 10-gal cans which are painted different colors to identify the two oils. Each section has a certain number of cans assigned proportional to its consumption. These are tagged with metal checks which enable the attendent to keep accurate records of oil consumption for each section as well as the care given cans.

It is not necessary for the section foreman to order hydraulic oil because empty cans are exchanged for full ones every day.



This method eliminates over or under supplying. Gear oil and grease are delivered on order to each section in the original 15-gal containers. Journal oil and motor oil are received at the plant in 55-gal drums and transferred to smaller cans outside the plant.

Support Prevents Clamp-Screw Damage



A SPRUNG C—clamp screw can be a thing of the past, reports Charles H. Willey, Penacook, N. H. He says many C-clamp screws are damaged or even destroyed by exerting too much strain on them. To provide support for the screw, a two-piece supporting member was made to fit around the lower part and prevent movement as the clamp is tightened. Mr. Willey says that a C-clamp also works better with the support.





20,000 tons of washed coal per day adds up to 40,000,000 tons

This is the minimum tonnage expected to be hauled in an estimated 12-year life by the main "U.S." belt on this conveyor system.

The system is installed in U. S. Steel's Robena Coal Mine, Uniontown, Pa. Robena is actually three mines, all serviced by the same preparation plant. This combination constitutes one of the largest coal-producing units in the nation.

A single U. S. Rubber Slope Belt (installed 1953) conveys all the washed coal, amounting to over 20,000 tons a day. A second "U.S." Belt (installed in 1951) conveys coal to the blending bins.

It's top year-in and year-out performance like this that makes U.S. Rubber the world's largest producer of belts.

The belts in Robena were designed and installed with U.S. Rubber's COORDINATED ENGINEERING... the engineers of the mine, the builders of the conveyor system, and the "U.S." Belting engineers all work in coordination to produce the most efficient and economical coal-handling system.

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Visit Booth No. 801 American Mining Congress, Coal Div.



Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

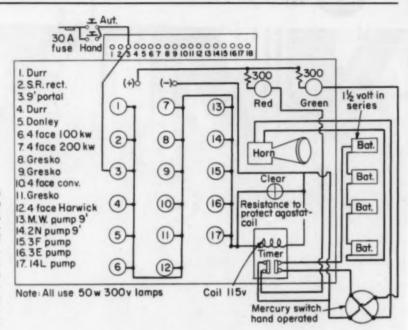
In Canada: Dominion Rubber Company, Ltd.

Lampboard in Shop Monitors Outlying Substations

THE DIAGRAM (right) represents a lampboard erected in the surface shop at Warwick mines, Duquesne Light Co., Greensboro, Pa., to provide shop personnel with immediate indication of trouble at any of the outlaying substations, fans, pumps or other such facilities of the company. The board, as designed by Michael Minnick, superintendent of maintenance, is fitted with a lamp for each of the stations, plus a few spares for possible future installations.

Each lamp is connected by a single wire (20-gage wire from discarded telephone cable) to its associated station. The negative trolly line serves as a return. The stations are as far as 5 mi away.

If the circuit breaker should open at any of the stations, its corresponding lamp on the board lights up. If the lamp is not noticed by shop personnel, a horn sounds after 20 sec. The reclosing interval of the breakers at the stations is 10 sec. Therefore if the breaker recloses and

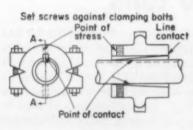


stays put the horn does not sound. The timing switch on the board controls the horn.

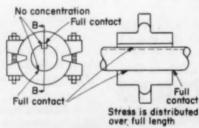
The horn can be silenced by operating the hand-operated mercury switch.

This operation switches current from the red lamp to the green lamp, which shows that the fault has not been cleared, the horn has merely been silenced. The resistors in the red and green lamp circuits and the lamp in the timer circuit are there to increase the life of these three indicators. All station-indicating lamps are clear 50-w, 300-V.

This board makes it possible for a maintenance man to go directly to the scene of the trouble. Formerly three company cars took to the road to find the trouble when an outage occurred. It also was a former practice, now dispensed with, to have the stations patrolled for 2½ hr each shift.



Sec. AA Fig.1 Old style



Sec.BB Fig.2 New style

Better Mounting Holds Split Wheel Solidly

A BETTER WAY to hold a split wheel on a shaft is suggested by T. H. Anderson, Oak Ridge, Tenn. His method, employing only a key, involves cutting the keyway 0.015 in shallow, which enables the key to hold the wheel halves slightly apart. Thus the two parts of the wheel approch the action of a clamp hub. The clamping action of the hub causes it to tighten down on the top of the key and on the shaft on the side opposite the key. This clamping action prevents the key from moving in the keyway and also prevents the wheel from moving endwise on the shaft.

Mr. Anderson reports that the new method, applied to heavy-duty sprocket drives for belt conveyors plus some bucket conveyors, has proven to have about double the holding power of the old method using a standard straight key in a standard keyseat.

The old system employed a key and two set screws. The key transmitted the power and the set screws kept the key from rocking in its slot or moving out along the axis of the shaft. As shown in the illustration, the wheel was supported on one end on the points of the set screws. As a result, there was an unstable condition for supporting the load because the set screws tended to work into the shaft and the wheel eventually came loose. And movement of the key in the keyway caused it to distort and the fretting corrosion was speeded. It was to eliminate these troubles that Mr. Anderson changed to the new method of mounting a split wheel.

WEMCO-FAGERGREN FOR FINE COAL FLOTATION

INSTEAD OF THIS...

GET

THIS ...

AND THIS...

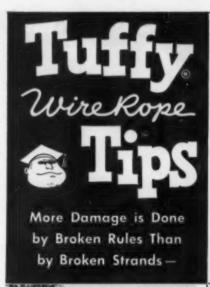
...WITH
WEMCO-FAGERGREN FLOTATION!

WEMCO

a division of

Western Machinery Company, Dept. C. A. 650 Fifth St., San Francisco, Calif. and throughout the world Coal operators now have a solution to washery water reclamation and stream pollution problems, producing, at the same time, a marketable fine coal product! Wemco-Fagergren Flotation Machines are at work in a number of installations, proved in low-cost, efficient recovery of clean coal fines, removal of solids from cleaning plant water and clarification of water for re-use in closed plant systems.

If you have a coal recovery problem, chances are that Fags can turn it to advantage. Ask for complete information now!



Rule 1: RIGHT WAY to Set Up Reel for Unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel.

In the picture below, unwinding has started and the reel is turning faster than the rope is being pulled off. But no damage is done. Why? Because in coming from the under side of the reel, the rope is simply loosening, without forming loops





Tuffy Balanced Dozer Rope

Built to give you longer service with less downtime. Mounted on your dozer, a 150' reel of 1/2" or 9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You

Also available in 300' and 500' reels.

Rule 4: What's The Correct Lay for Each Type of Winding?

"Lay" refers to the direction of the strands in wire rope. It's a right lay rope when the strands pass from left to right across the rope. It's left lay when they pass from right to left.

The direction of winding on the drum is determined by standing behind it, looking toward the direction of rope travel.



Right to Left Left Lay Rope

When winding one layer only on a smooth drum, the right and left lay ropes indicated in the drawings below will give the best service.



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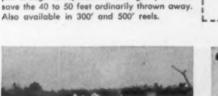
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Tuffy Balanced Scraper Rope

"Balanced" construction makes it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.



Tuffy Balanced Dragline Rope

Here's highest abrasive resistance with super flexibility. Better spooling. Smoother riding on grooves. And Tuffy Dragline Rope hugs the drum when casting for full load. Gives you longer service life, consistent dependability, in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.



Tuffy Balanced Slings & Hoist Lines

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job langer.

ness are balanced.

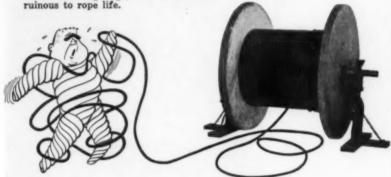
Tuffy Slings and Hoist Lines are a top-perform ing team in every type of materials handling. The slings are made of a patented, machine braided fabric that's next to impossible to knot or kink. The hoist lines are a special construc-



tion in which strength, flexibility and tough-

Rule 2: WRONG WAY to Set Up Reel for Unwinding

The rope is coming from the top of the reel and forming loops as it over-runs. These loops are likely to form kinks and dog legs, which can be ruinous to rope life.



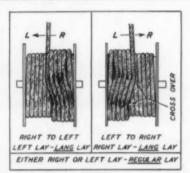
Rope for multiple layer winding: When a rope winds in the first layer across the face of a drum, it usually ms a uniform helix. On reaching the flange of the drum, the rope rides upon the last turn and starts wind-ing back across the face of the drum, but falls into the depression of the successive turns of rope on the first

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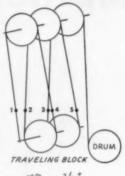
Advancing across the drum on the second layer, the rope, following the depressions of the first layer, actually winds back a turn in each revolution of the drum. It must the cross over two depressions of the first layer to have a net advance of one turn per revolution.

This cross over is unavoidable on the second and succeeding layers. Severe punishment of the rope results, due



to abrasion of the adjacent turns against each other, and the crushing from the next layer above at these points. Parallel-grooved controlled cross-over drums minimize this condition.

Rule 3: How to Figure Reeving Loads





Reeving ropes through sheaves multiplies

the number of parts supporting the load. The lead line to the drum carries the weight of the load lifted, divided by the number of parts, plus the accumula-tion of friction on all sheaves.

To count the number of parts supporting the load, draw an imaginary line across the parts of the rope supporting the load.

The efficiency of reeving sys-tems ranging from one to eight parts is shown in charts which Union Wire Rope engineers make available to users.

Rule 5: Use the Tuffy Special Purpose Wire Rope "Tailored" to a Specific Application

There was a time when just any size and lay of rope was cut from a stock reel and used for just about any kind of service. It's different today. The various constructions of Tuffy Ropes are precisely fitted to each type of use.

There are thousands of different wire rope constructions. Union Wire Rope makes them all. But there's only one Tuffy line of ropes. Each Tuffy is the right rope and the best rope for the particular work for which it was developed. Each is "job prescribed". Each has the right balance of strength, flexibility and toughness to give you longest service, greatest efficiency and safety.

Union Wire Rope Corporation, Subsidiary of Armco Steel Corporation. Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand. 2130 Manchester Avenue, Kansas City 26, Mo.

Your Tuffy Distributor Can Help You Get Longest Service Life and Cut Rope Costs





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Subsidiary of ARMCO STEEL CORPORATION
OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The Rational Supply Company

Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Southwest Steel Products

New steels are born at

Equipment Developments



Drill Bites 9-in Holes

Ingersoll-Rand, N. Y. C., is marketing a giant Downhole drill for open-pit mining and general hard-rock work. It weighs 460 lb, uses Carset bits and will put down holes up to 9 in. Using the machine with its larger bits, 4¾ to 9 in, you can space out your holes more and employ larger powder charges. The result, according to the manufacturer, is more efficient and less costly mining. The company states that its drill doesn't lose any power through rods or couplings because the unit is right behind the bit, striking direct hammer blows as it bores. This DHD-500 model, which was designed for use with Ingersoll-Rand's Quarrymaster mounting, continuously cleans cuttings out of the hole by a patented exhaust method, cuttings being sucked up through the drill itself while the machine functions.



Combination Unit

Caterpillar Tractor Co., Peoria, Ill., has expanded its 1959 line with No. 619 wheel tractor—No. 442 scraper, combination. No. 619 will operate safely and effectively at high speeds, up to 30.2 mph, formerly possible only with tour-wheel hauling units, according to Caterpillar. A 225-hp turbocharge diesel

engine powers the new tractor, developing maximum rated horsepower of 2,000 rpm. The engine, matched to the 14 cu yd (struck) capacity of No. 442 Series B scraper, features a special turbocharger resulting in a 20% torque rise. Besides having regular Cat features—dry-type air cleaner, adjustment-free fuel system, special-alloy valves and aluminum-alloy pistons—the new machine is highlighted by greater accessibility of tractor components, new 90% hydraulic steering and air-boosted clutch for ease of operation.



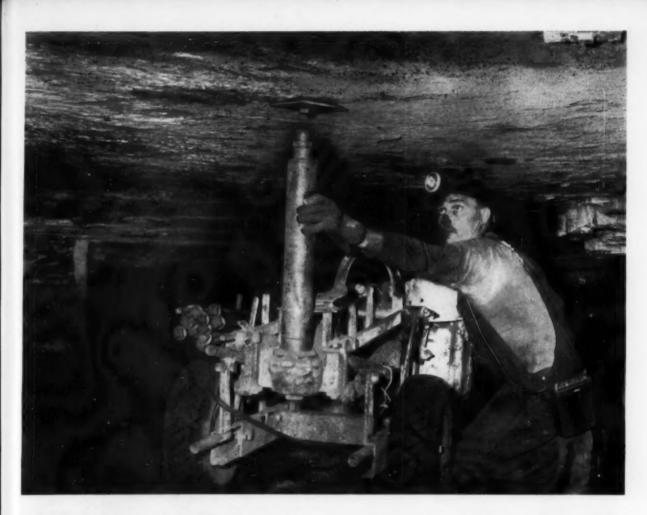
Large Wheel Tractor

The International 660 is now rolling off the production lines of International Harvester Co., Chicago 1. With about 75 hp at the belt and 68 at the drawbar, it is the newest and largest wheel tractor of its type, reports the firm. Versatility is the key feature of this six-cylinder tractor. Equipped with frontend loader and backhoe, it performs an endless variety of materials-handling and digging jobs, according to Caterpillar. It is built to work with a ¾ cu-yd International-Wagner frontend loader and will be equipped with International-Wagner and Pippin backhoes with 14½-ft working depth.



Spacer System

Rome Cable Corp., Rome, N. Y., is marketing a primary distribution system featuring a simple new spacer design. Called



NEW SPEED...NEW SAFETY

with latest

CP ROOF BOLTING UNIT

Takes less than 3 minutes to complete the whole bolting cycle-drilling to bolt setting-with the new RBD-30S-579. New, separate tramming motor, with dual wheel drive, permits fast, easy movement from place to place. Instant forward, stop and reverse push button controls speed up positioning of unit when drilling holes.

Every hole this rig drills is just right . . . no doglegs! Per-

fect holes mean safe bolt installation.

New enclosed motor provides 30% more power. Built-in fan removes heat-lengthens insulation life. Stalling is prevented by built-in clutch that slips on overloads.

RBD-30S-579 is furnished with low speed spindle adapter, and low seam drilling attachment. Available, also, with water swivel attachments.

cago Pneumatic & East 44th Street, New York 17, N. Y.

PREUMATIC TOOLS . AIR COMPRESSORS . ELECTRIC TOOLS . DIESEL ENGINES . ROCK DRILLS . HYDRAULIC TOOLS . VACUUM PUMPS . AVIATION ACCESSORIES

Equipment Developments (Continued)

"Trimline," the system provides compact overhead distribution in a system practical for utility and industrial overhead circuits in the 5-15 KV range. Highlight of the system, the plexiglass spacer, is made so that phase conductors are spaced on 6-in equilateral centers. The spacer completely encompasses the phase conductors and is easily and securely fastened by a lock ring, states the firm. Recommended especially where additional circuits are required on one pole, existing poles are crowded, or bad tree and storm conditions upset open wire lines, the Trimline is completely described, illustrated and explained in Bulletin RCP-790, which you can get from Rome, free of charge.

New Utility Car

Hayes Metal Products Co., Pykesville, Ky., is producing an air-driven utility car for carrying light-weight air tools within reach of any working point in the mine. The firm notes that the car makes a compact easy-to-handle roof-bolting machine, enabling two men to clean up, roof bolt and set timbers in place in record time. The machine, equipped with two stoppers, two impact wrenches, drills, hammers and other air tools, is also recommended for maintenance and emergency repairs.



FIGHTING FIRE—The cannon ballish looking object is a multi-purpose fire extinguisher developed by Ansul Chemical Co., Marinette, Wis. Named "Monitor," it weighs only 2½ lb and may be operated with one hand. The compact shape of this dry-chemical extinguisher permits it to be placed in a minimum amount of space. When used up the round cartridge can be instantly replaced for continued use.



PLASTIC TAG PROTECTORS — You may want to tag machinery or facilities with paper tags shielded from the elements by new plastic tag protectors from Bedford Products, Inc., Roanoke, Va. The manufacturer emphasizes that the protectors are lower-priced than metal tags and come in three sizes for any standard-size paper tag. They are highly recommended for indoor use on



machines, switches and areas where

soiling creates a problem.

VIBRATORY FEEDER-New "Hi-Vi" vibratory feeder manufactured by Eriez Mfg. Co., Erie 6, Pa., handles 50 tph and is extremely powerful, rugged and compact, according to the firm. Basically, the machine follows the design of smaller Eriez feeders which feature the patented Eriez electropermanent magnetic-drive system that operates directly from AC without a rectifier and a spring system of special epoxy-boned fiber glass for long life. Quiet operating, new Model 70A is said to be excellent for spreading, drying or agitating materials, handling hot materials or moving materials into hot areas at a precise rate. Standard trays for the 70A come in these sizes: flat trays-18x42 in and 12x60 in; tubular trays-12x36 in and 8x60 in.



POWER UNITS—Ford Div.'s Industrial Engine Dept. introduced four new industrial power units, giving the firm a full line of power-unit combinations for its diesel and gasoline industrial engines. The units, says Ford, include the most modern engines fully adapted with sheet-metal housing and instrument panel, electrical system, radiator system and other key components. Built around Ford's 330-cu in six-cylinder diesel engine and the three new "Super Duty" gasoline engines of 401, 477 and 534 cu in displacement, the units feature compactness, durability and ready parts availability.



LIGHTWEIGHT DRILL — Bucyrus-Erie Co., Milwaukee, launched a new product with the first sale of its "Winkie" l'ghtweight diamond-core drill. The drill weighs only 45 lb, is 19 in high and 21 in wide. One man can operate it on 2 to 2½ gal of fuel per day. A two-cycle air-cooled gasoline engine producing 5½ hp at 5,000 rpm powers the little malo fr pr sw ge

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B.F.Goodrich



B.F. Goodrich tires give coal hauler 50% more service than any other make

Twin Seam Mining Co. of Tuscaloosa, Ala. operates 17 dump trucks
to haul coal over dirt roads that
are mountainous and winding. Payloads average 15 tons. Tire blowouts
from impacts against rocks were a
problem for Twin Seam. Then they
switched to B.F. Goodrich Rock Logger tires. Result: no road delays caused
by punctures or blowouts, and 50%
more service than from other makes.
Rock Logger tires are retreaded after
100,000 miles for an additional 50,000
or more miles!

B.F.Goodrich builds the Rock Logger with a specially compounded tread that resists rock cuts and bruises. Under the tread is the B.F. Goodrich FLEX-RITE NYLON cord body. FLEX-RITE NYLON withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. No wonder this B.F. Goodrich cord construction outwears even extrathick treads, can still be retreaded.

Take a tip from Louis Bosch, head mechanic at Twin Seam, who says: "Rock Logger tires give excellent traction—and can really take a beating!" See your nearby B.F.Goodrich Smileage dealer today. He's listed under Tires in the Yellow Pages of your phone book. B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F.Goodrich dealer for entry blanks.

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment



B.F.Goodrich truck tires

The B. F Goodrich Company

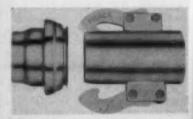


installed either as a stationary unit or mounted on a skid-frame as a semiportable machine. According to the firm, the new compressor has such extreme balance that it can be operated on a skid frame without additional fastening to a foundation. Benefits of the machine cited by Atlas include reduced space requirements, simplified lubrication, and annular valves to provide larger effective air-flow areas with reduced power consumption.

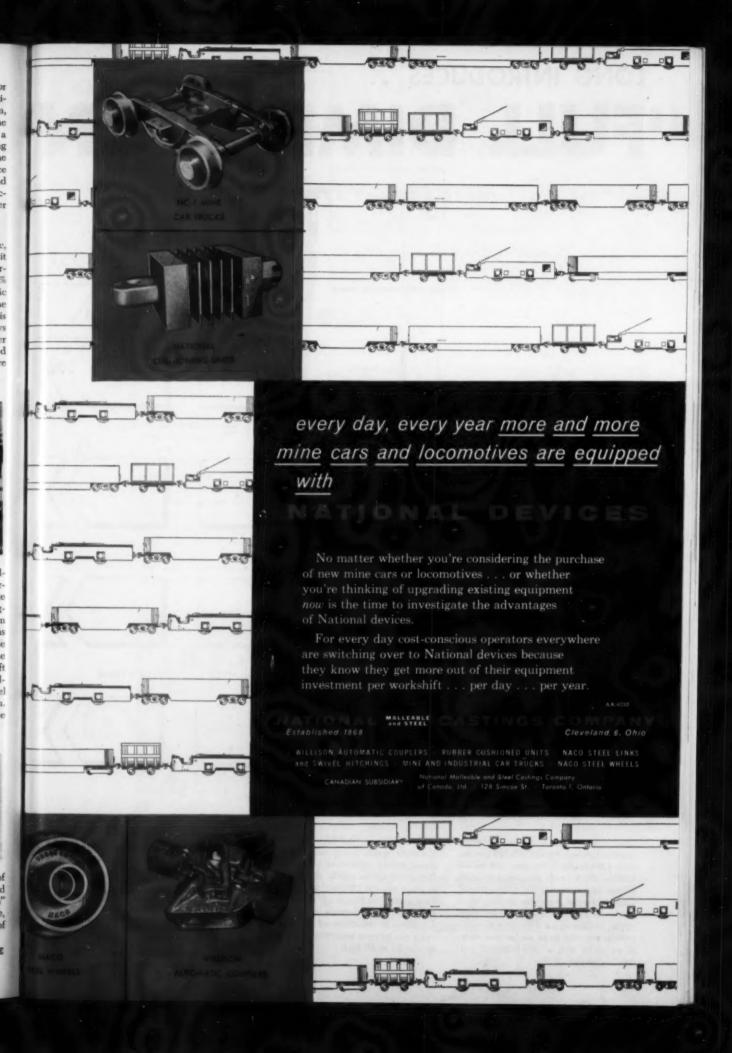
POWERFUL LAMP—General Electric, Cleveland 12, has developed what it terms "the world's most powerful fluorescent lamp." The new tube gives 15% more light with only 7% more electric power. An improved version of the Power-Groove lamp, its extra light is worth \$2.60 a year to the user, says GE, yet the price is unchanged. Other advantages cited include: reduced weight for easier handling and more rugged design for long life.

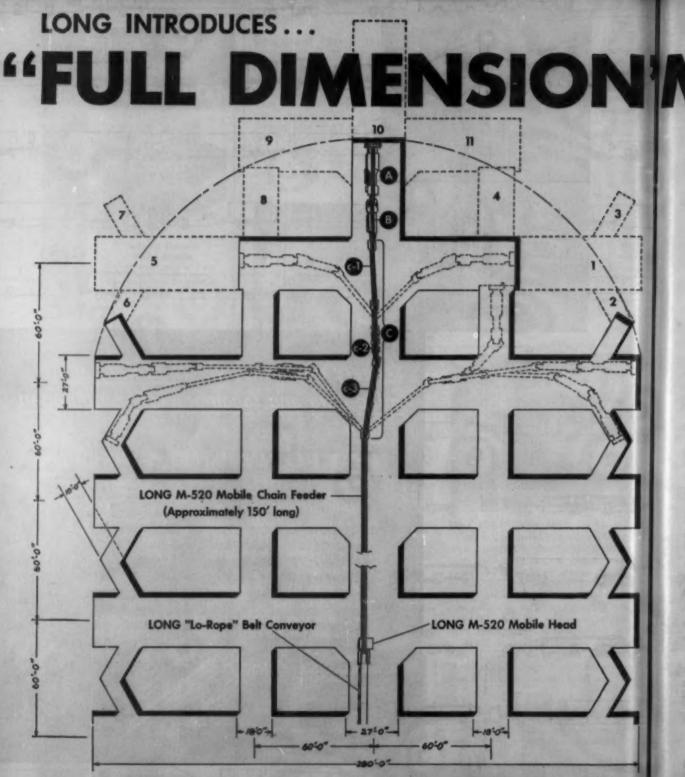


TILT CYLINDERS—Hydraulic tilt cylinders on their bulldozers, reports Caterpillar Tractor Co., Peoria, Ill., facilitate tough work such as land clearing, digging rocks or removing stumps. Reason is that with the cylinder tremendous prying action can be put on the blade corner from an in-the-seat position. The hydraulic cylinder replaces the left dozer brace only and because the cylinder rod is extended halfway at level position, it can tilt in either direction. These cylinders are available for the Nos. 78, 8S, 9S and 9U bulldozers.



NEW COUPLING—A new method of coupling industrial compressed-air and liquid pipelines called "Quick Pipe" from R. H. Pierce Mfg. Co., Eugene, Ore., is said to be the result of 25 yr of





Coal is mined by a continuous mining machine followed by a LONG 188 Loader. Behind the loader is the three-unit mobile bridge, which feeds on a mobile chain feeder approximately 100-150 feet long. Coal is moved from the mobile chain feeder to a LONG "LO-ROPE" Belt Conveyor, which may be driven by a mobile crawler mounted head section and which is equipped with a "HY-WINDER" belt winding station.

Extensibility of the "FULL DIMENSION" Conveyor System during operation is provided by the movement of the second Figgyback on the mobile chain feeder a distance of up to 150 feet, plus the movement of the first Figgyback on the mobile bridge carrier a distance up to 20 feet. Extensions or retractions of the best conveyor are mode at breakthrough intervals, usually 50 or 60 feet.

Equipment Designation (See Diagram) A. Continuous Mining Mechine B. LONG 188-D Loader	Effective Longth 30'0" 22'0"
C. 3-Unit Mobile Bridge includes: -1 LONG PT-218 Piggybeck Const -2 LONG Mobile Bridge Carrier -8 LONG PT-218 Piggyback Const	syer 32°2° 25'8°
Coal Trajectory From Miner (Not shown) Total Effective Longth	2'0'

IMING _THE FIRST AND ONLY

EXTENSIBLE CONVEYOR SYSTEM THAT OFFERS:

- Multiple headings from one conveyor
- · Recovery of pillars up to 100 feet wide

The LONG "Full Dimension" Extensible Conveyor System offers higher capacity conveyor mining with all the flexibility of shuttle car haulage. Because of its long articulated reach and extensibility, this new system can be applied to almost any normal mining plan. The example on the opposite page is but one of many which can be used practicably.

Advantages of "FULL DIMENSION" MINING which have been demonstrated in many months of development and experimental use include:

- Continuous three-shift operation with virtually no delays for transportation.
- 67% increase in production per face man over a six-month period.
- Belt extensions are made, using the exclusive "HY-WINDER", at 60-foot intervals in approximately 15 minutes.
- Each extension (in 48" coal) permits the mining of 1500 tons with no delays except for repositioning the continuous mining machine.
- Deeper rooms and/or fewer belt moves with practical room transportation distance of 1000 feet or more.
- Dramatically improved housekeeping on the section with no constant movement of mobile machinery.

- Improved ventilation and safety because permanent stoppings are carried closer to the face with only the last open breakthrough being used for production haulage.
- Maximum crew cooperation resulting from the elimination of lifting, dragging, dodging, etc.
- Greater efficiency as there is more concentration of activity in a single working face for longer periods of time.
- Important safety advantages in improved roof support result from not having to keep open multiple haulways beyond the last open breakthrough.
- No wait whatsoever for transportation (except the 15 minutes required at each 1500 ton interval).



The "HY-WINDER" provides mechanical assistance in extending or retracting the belt conveyor. An extension requiring 15 minutes provides reach sufficient to mine over 1500 tons. (See diagram at left.)



The three-unit mobile bridge, an exclusive LONG development, is highly mobile and maneuverable. It provides articulated reach up to 150 feet during full continuous conveyor operation.

Write for details or a demonstration

The

LONG Oak Hill, W Va

Company

Equipment News (Continued)

research. Quick Pipe, declares the company, eliminates the threading, flaring or flanging of pipe joints, thus speeding assembly or disassembly and saving up to 90% of installation time and labor. No tools are required—the couplings snap together; the manufacturer adds that they have been "torture tested" up to 17,000-lb direct pull without damage. Couplers come in 2, 3, 4 and 6 in sizes for use with standard steel I. P. S. pipe or steel and aluminum tubing of all gages. Recommended maximum working pressure for 2 through 4 in dia is 300 psi; for lines over 4 in dia, 200 psi.



SPEED ASSEMBLY-It is now possible to speedily assemble reusable "Hoze-lok" fittings onto industrial rubber- or cottoncovered, wire- or fabric-braided hose

with a new power machine from Parker Hannifin Corp., Cleveland 12. Portable Model 442 weighs only 160 lb and handles hose from ¼ through 1% in inside diameter. A ½-hp, 60-cycle electric motor drives the machine. To operate, you place the hose-fitting socket in the chuck and clamp the hose in the machine's floating vice. The hose is then pushed into the socket which is turned by the machine counter clockwise onto the hose. The fitting nipple is then set up and screwed clockwise onto the hose and socket.



VIBRATION INDUCER – A highamplitude vibration inducer designed to start and keep materials moving during unloading of railroad cars or hoppers

has been produced by the Martin Engineering Co., Neponset, Ill. Called "Vibrolater CCVP," the machine is excellent, states the firm, for moving materials from massive bins, hoppers or chutes. It is portable with its own mounting clamp, fits in any position or angle convenient to the job. Pneumatically-driven, the machine starts and operates with minimum air at any angle, is shockand spark-proof, adds the firm.



ALL-WEATHER MOTOR — All-weather, vertical, hollow-shaft motors in ratings of 1 to 30 hp are available from The Louis Allis Co., Milwaukee 1, They

something to think about . . .



With labor and material costs rising all the time, it is up to management to find methods and means to keep production costs as low as possible.

Refuse disposal is always looked upon as a RED INK item—but, alert mining operators know that the handling of refuse can be the difference between an indifferent and a successful operation.

An Aerial Tramway is not a magic wand...but it will take only a bit of your time to find out what it might do for you.

This Aerial Tramway handles ever 5000 tens of refuse per day, and has been in continuous operation since 1948.



INTERSTATE EQUIPMENT CORPORATION

ELIZABETH, NEW JERSEY

300 Mt. Lebanon Boulevard, PITTSBURGH 34, PENNSYLVANIA

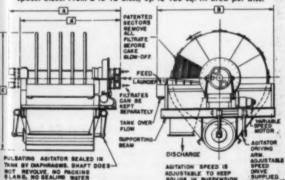
DENVER agitator type COAL FILTER

THICK, EVEN FILTER

Tank agitation makes this possible

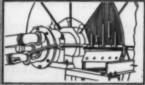
DENVER'S LARGER FILTER CAPACITY

gives greater filter area per square foot of floor space. Saves space. Sizes: From 2 to 12 discs, up to 160 sq. ft. area per disc.



(PAT PEN 75 75 mp. 5'-0" 7'-4" W-8" 13"-4" 15'-8" 18'-0" 9'-2" W-8" 160 160 act 6'-11 2" 8'-7 2" 12'-32" 16'-32" 18'-112" 21'-72" 12'-11" 13'-8" 14-5 14-7











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Equipment News (Continued)

are recommended for indoor as well as outdoor unprotected service on shallowor deep-well turbine-pump applications. Compactness and handling ease are featured while motor construction makes possible in-the-field assembly or removal of coupling and thrust bearing with a wrench in 5 min, states the firm.

AIR COMPRESSORS-Adding to the scope of its operation, Lincoln Engineering Co., St. Louis 20, now offers a full line of air compressors. Included are

200 models with engine capacities from ¼ to 20 hp, air displacement up to 92 cfm and tank capacities up to 200 gal. Both horizontal and vertical models feature automatic starting and stopping and all models are loadless starting. Other highlights include: lightweight balanced four-ring automotive-type pistons; dropforged balanced crank shaft of high-carbon steel and piston-type oil pump for constant lubrication.

IMMERSED CONTACTORS—For applications from 2,000 to 4,800 V, a new heavy duty oil-immersed contactor, Type

426, has been introduced by Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. The 400-amp contactor with 50,000-kva interrupting ratings for either 2.5 or 4.8 kv is the first unit of its kind in the reduced size, according to the manufacturer. It is designed to handle 2,500-hp squirrel-cage motors at 4,800 V and unity-power-factor synchronous motors up to 3,000 hp, 4,800 V.

DIESEL UNIT-A new diesel power unit, the International UDT-817, is now in production at the International Harvester Co.'s Construction Equipment Div., Chicago, 1. Reputed to be the most powerful ever built by the firm, the engine is a 6-cylinder, turbocharged, 4-cycle unit, with a 5 %-in bore and a 6-in stroke. It displaces 817 cu in and has a compression ratio of 16:1. Maximum horsepower is 355 at 2,100 rpm while maximum torque equals 1,040 lb ft at 1,400 rpm. Features cited by International as outstanding include: fast, direct starts with 24-V electrical system: direct injection of fuel under pressures to 20,000 psi by individual camshaft actuated multi-orifice injectors; aluminum alloy pistons and jet oil cooling.

FRONT-END HOISTS-A new frontend hoist for 8-, 9- and 10-ft bodies has been developed at Marion Metal Products Co. The new hoist includes three models: the F-513T-65 for 8-ft body lengths; the F-513T-72 for 9-ft bodies; and the F-513T-82 for 10-ft bodies. One of the most outstanding features of this hoist, states the manufacturer, is the ease in which the cylinder attaches to the body. This method speeds up installation and allows fast easy detachment for any servicing of the hoist in the field, it is added. The first connection is made to the top of the cylinder before the body is installed. Then as the body is let down, the cylinder will guide itself into place in the cylinder housing, according (Continued on p 214)



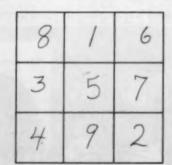
CF. I Space Screens

reduce cost by cutting downtime

This Image—the CF&I giant steelman—reflects CF&I's experience and versatility as a primary producer of quality steels and hundreds of steel products for industrial use. And the CF&I Image is your assurance of durable, accurate space screens.

Because CF&I Space Screens are designed to give long service life, you have fewer work stoppages due to screen failures, and your cost-per ton screened is reduced. The types of wire, weave, crimp and edge preparation are chosen to give maximum performance under specific job conditions. Included in the types of screens available are Super Tempered Screens, made from a special oil-quenched wire, and Wisscoloy Screens, made from a special alloy steel wire. The wire in each screen is crimped to close tolerances for accurate spacing, and woven extra tightly on heavy-duty hydraulic looms so that spacing remains uniform during use.

For engineering assistance and prompt, dependable service, call the CF&I sales office nearest you.



ANSWER to brain teaser on p 188 of Foremen's Form.

TEI .

CF.I SPACE SCREENS

THE COLORADO FUEL AND IRON CORPORATION

In file West: THE COLORADO FUEL AND IRON CORPORATION Abbasescene Amerille Billions State States States Serve Lipson Fil. Worth Newston Lincoln Los Applies Coloridad Gillatones City Processis Pertised Pertised State City Sen Francisc Sen Los Andrews Contille Spokane Wichits

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COAL



Photo: Courtesy of Boone County Coal Corp.

Now...one *new* lubricant and one hydraulic oil meet all your daily underground needs

By teaming only two Sunoco petroleum products, miners are increasing tonnage, because they are running longer . . . without shutdowns for inspection and maintenance. They're simplifying their inventories and lessening the chance of mix-ups. Parts are lasting longer.

The new lubricant that makes this possible—Sun's 740A-EP—is an all-purpose, semifluid, extreme-pressure mine-machine lubricant.

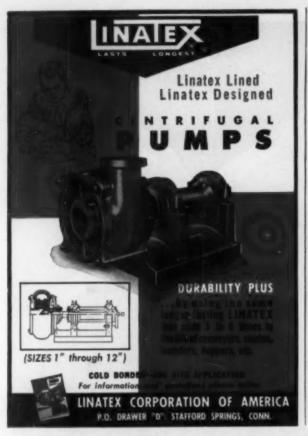
It sticks like a grease...pours like an oil...resists water and heat...protects against corrosion and rust.

Combine new Sun 740A-EP with one of Sun's quality hydraulic oils and you have reduced your daily underground lubricant inventory to an absolute minimum. This is just one more example of how you can save money with Sun quality... the best economy of all. For information,

call locally, or write to Dept. CA-4. SUN OIL COMPANY, Phila. 3, Pa. In Canada: Sun Oil Company Limited, Toronto and Montreal.



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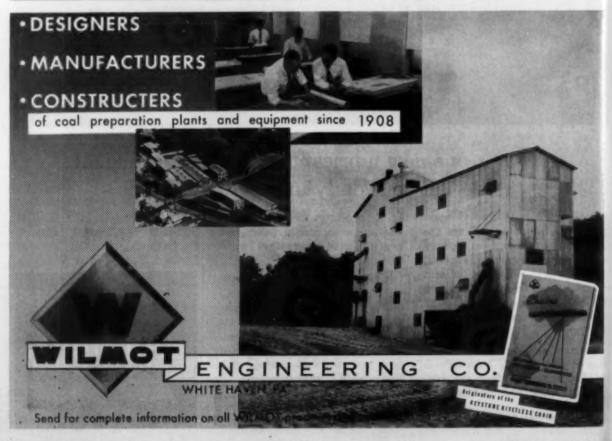
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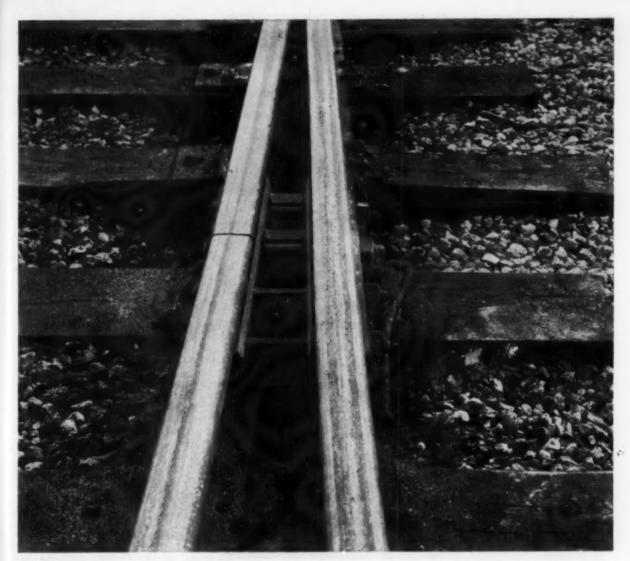
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Hdqs. or Mine Name

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CC



What a world of difference Bethlehem's switch heel block can make

This turnout in a western Pennsylvania coal mine is equipped with Bethlehem's new Switch Heel Block Joint, Design 992. To the eye it is scarcely noticeable. Yet what a world of difference it makes in smooth operation and reduced maintenance!

Developed especially for use with mine turnouts, Design 992 helps maintain heel spread and track gage at the heel end of the switch, keeping closure rail and switch point in correct alignment both vertically and horizontally. Your own men can install this efficient device quickly, and the results will be gratifying.

The Heel Block itself is a sturdy weldment which fits snugly between the stock rail and the closure rail and switch point. Two bushings welded to one side of the block slip through holes drilled through the switch point, and the bolts pass through this whole assembly. In this way lateral play is provided even when the bolts are drawn up tightly, permitting normal movement of the points.

You can get the Design 992 Switch Heel Block to fit any length of switch or weight of rail, from 40 lb per yd on up. You'll find with your first installation that the 992 really does make a difference—for the better. A Bethlehem engineer will be glad to demonstrate the value of Bethlehem Switch Heel Blocks for your haulage system. Just get in touch with our nearest district office.

BETHLEHEM STEEL COMPANY, BETHLEHEM PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Expart Distributor: Bethlehem Steel Expart Corporation

BETHLEHEM STEEL





SAVE UP TO 60% IN PIPING COSTS!

Now there's no need to buy overweight pipe. Thanks to Victaulic engineering, you can select lightweight pipe "jobrated" to your conditions and install it the new VIC-EASY way. You'll cut costs of pipe, transportation, and handling—you'll save from 30% to 60% in man-hour installation.



1. LIGHTWEIGHT PIPE in thicknesses from .065" handles high pressures. Leading mills make sizes 114" to 12", steel or aluminum, with VIC-EASY roll-grooved ends.



2. VIC-EASY PORTABLE GROOVER rolls grooves into pipe in seconds. Manually or power-operated, this groover removes no metal...retains full wall thickness.



3. VICTAULIC SNAP-JOINT COUP-LING assembles and locks by hand no wrenches or tools required. Other bolted styles of Victaulic Couplings alternately usable.



4. VICTAULIC FULL-FLOW FITTINGS team up with our couplings and light-weight pipe to provide a complete VIC-EASY system...cuts costs of installation and operation.

For complete information write for Bulletin AA4

VICTAULIC COMPANY OF AMERICA P.O. BOX 509 + Elizabeth, N. J.

Equipment News (Continued)

to the firm. Other benefits include: weight savings of 65 to 90 lb and fast dumping speed.

PUSH-BUTTON STATION - A new pendant push-button switch with Neoprene housing featuring waterproof, noncorrosive, lightweight construction has been introduced by the Electrical Products Div. of Joy Mfg. Co., St. Louis, Mo. The Joy push-button station is available in either 3- or 4-button models. The streamlined, 2-piece Neoprene housing weighs a fraction of any conventional cast iron unit, is about 1/2 the size and offers completely waterproof, rustproof and corrosion-proof construction, according to the firm. A specially designed ring-shroud protects each button from accidental action from any lateral direction, notes Joy. Applications include hoist and crane operations, suspension above heavy factory machinery and in any other area where non-bulky pendanttype stations are needed.

BULLDOZER-No. 977A angling bull-dozer is now available for No. 977
Series E. Traxcavator, according to Caterpillar Tractor Co., Peoria, Ill. It had been available in the past only for the No. 977 Series D Traxcavator. Changes making the bulldozer available for use on either model Traxcavator include: a 2¼-in wider C frame with trunion groups adapting it to the series machine on which it is to be mounted.

TRANSMISSION — Fuller Mfg. Co., Kalamazoo, Mich, announces production of a new heavy-duty sem-automatic transmission designed for big earthmoving and construction equipment. Called the .R-1160 "RoadRanger," the new model is for tractors and trucks equipped with engines of up to 1,160 cu in piston displacement. It is designed to handle up to 800 lb ft of engine torque. Featuring nine forward ratios, the R-1160 is built to give fast work cycles.

SPEED REDUCER-A new line a helical-gear speed-reducing apparatus called Moduline has been announced by Westinghouse Electric Corp., Pittsburgh, Pa. Basic subassemblies and accessories are combined to make any helical-goar drive configuration, says the firm, and use of parts common to a wide variety of configurations has made mass production possible. Heart of the new gear line is a double-reduction cage with a fixed 5:1 set of low-speed gears. Every unit, with spin-flame heattreated high-speed change gears has overhung load capacity in excess of any loads expected in service when using sprockets, pinions, or pulleys for power take-off, adds Westinghouse. Seven unit





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a BIT is only as good as its CARBIDE

29 years of carbide research and manufacturing experience... controlling quality from the ore to the finished product... have produced the faster cutting carbides used in V-R Red Bits.

Put these rugged bits to work in your mechanized mining equipment for continuous trouble-free production. Quality carbide . . . plus engineering knowledge . . . plus complete V-R service add up to better cutting performance.

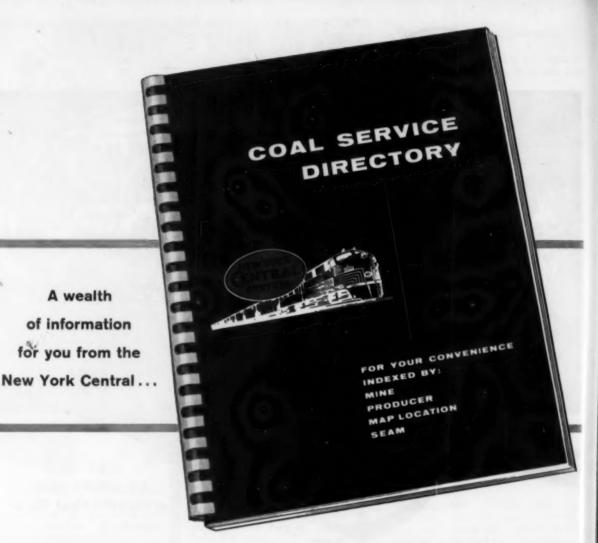
The best mining bits are manufactured at V-R... beginning with the manufacture of the carbide.



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New Coal Service Directory

Here's another example of how New York Central's technically trained Coal Sales Department staff can help coal users.

A wealth

If you use or contemplate using coal, you will be interested in the factual information included in this new Coal Service Directory.

Never before has so much basic data on mines, producers, seams, map locations been assembled under a single cover for the twelve major coal-producing areas located along the New York Central lines.

This new guide quickly identifies and locates any source or type of coal needed by name of mine and/or pro-

ducing company. An individual map for each of the coal-producing areas features a handy grid reference system which helps you locate any mine at a glance! Each of these maps is followed by a brief description of the coals produced in the area, including characteristics and uses for which they are most

New York Central's Coal Sales Managers are always on call to help you get the most for your coal dollar.

For assistance or for information about the new Coal Service Directory, call or write your nearest New York Central Coal Sales Department representative.

NEW YORK CENTRAL SYSTEM'S COAL SALES DEPARTMENT

Director of Coal Sales-

H. L. Willard . . New York

Fuel Engineer-

H. A. Kleeter . . New York

Coal Sales Managers:

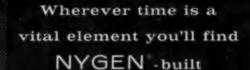
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New York Central Railroad

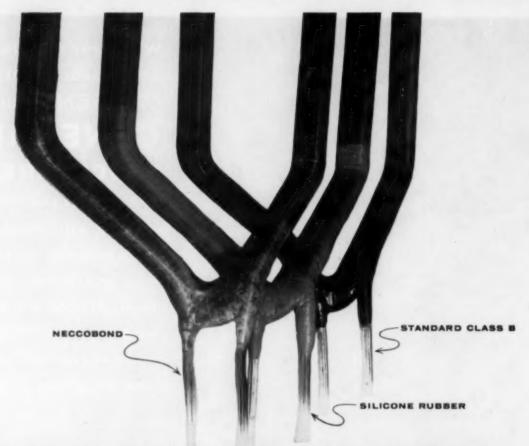


GENERAL TRUCK TIRES

grinding out the job . . . working and winning against the clock . . . exhibiting the incomparable strength and stamina that's made them favorites on the toughest projects.

Specify GENERALS on your new equipment

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National tailor-makes the coil to fit your application

These generator stator coils symbolize the full range of coil insulations offered by National Electric Coil. Since National either makes or uses all types of insulation, our recommendations are based solely on the requirements of your application.

Here's the range of insulation systems NATIONAL offers:

- · All Standard Class A, B, and H
- Silicone rubber
- Mica and glass combinations impregnated with catalytic type resins such as epoxies, polyesters and blends.
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You'll find it pays to deal with National.

Call or write for full information on our services.

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Stop off to see our plant in Columbus your nearest National field engineer can make arrangements.

Then-visit us at Booth 1601 at the Show-Cleveland, May 11th through 14th.





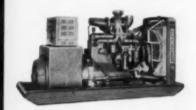




Allis-Chalmers makes all this coal equipment and MORE...

















at the COAL SHOW

Throughout the past quarter century, a close working relationship with plant operator has enabled Allis-Chalmers to design and build the type of equipment the coal industry wants and needs. Industry cooperation has also given Allis-Chalmers a vast volume of application information. As a result, you get a problem-solving combination of expert technical service and right-for-the job application from the broadest equipment line.

Allis-Chalmers coal equipment includes:

Crawler Tractors
Tractor Shovels
Motor Graders
Motor Scrapers
Pull-Type Scrapers
Motor Wagons

Utility Tractors

Power Units Industrial Engines Engine-Generator Sets Vibrating Screens Mine Pumps Solids Handling Pumps

Rubber-Lined Pumps

Ro-Flo Compressors Car Shakers Motors and Gear Motors V-Belt Drives and Motor Control Transformers Switchgear and Unit Substations

Call your nearby Allis-Chalmers representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS



Ro-Flo is an Allis-Chalmers trademark.

PERFORMANCE-PROVED





American Rolling Ring Coal Crusher

In 1908 American Pulverizer patented the rolling ring principle of coal reduction. Today there are thousands of American Coal Crushers in operation ranging in size from Sample Crushers to Crushers having a capacity of 800 tons per hour.

American manufactures reduction equipment exclusively, backed by a half century of experience in the production of coal reduction equipment. Although improvements have been consistently made in American Crushers, the rolling ring principle still remains the most efficient method of coal reduction. This fact is performance-proved by hundreds of cost of operations" reports from customers of American Rolling Ring Coal Crushers. May we have our engineers analyze your reduction problem?

Complete Literature Available. State your tonnage requirements.

"When you figure costs — the best results come from American Rolling Ring Coal Crushers."



PULVERIZER COMPANY

OF RING CRUSHERS AND PULVERIZERS

SAINT LOUIS 10, MO.

Equipment News (Continued)

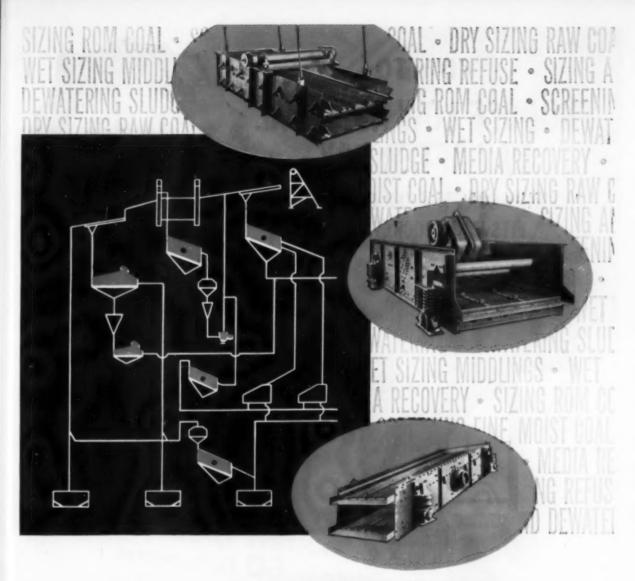
sizes to 30 hp are available in ratios of 5:1 to 625:1.

CARBON BRUSH—The Helwig Co., Milwaukee 10, has introduced its new Red Top carbon brush. The plastic top surface of the Red Top is said to resist any spring finger indentation or wear, and the neoprene pad combined with it absorbs vibration and shock, states the firm. As a result, it is added, the carbon wears longer, brush life is increased and commutation is improved.

MOTOR REWINDS-A new solventless epoxy "thin-wall" encapuslation process called Super Coilifer is now being used by all Westinghouse Electric Corp. repair shops for extending operating life of rewound electrical motors. Low viscosity of the epoxy provides superior penetration into the spaces between the windings and through the slots for completely void-free encapsulation, states the company. The new process can be furnished on Class A, B or F rewinds with their respective maximum operating hot-spot temperatures of 105, 130 and 155 C. Because wall thickness is precisely predetermined, Westinghouse notes, the insulation gives total protection with maximum internal heat transfer away from windings.

PLASTIC CONDUIT-"Dur-X" conduit made from a new plastic material will be marketed by Franklin Plastics, Inc., Franklin, Pa. The firm notes that the lightweight conduit, approximately an eighth the weight of steel pipe, can be assembled and laid by one person at the ditch in sizes up to 30 ft in length. Solvent-welded connections are made at the site by applying a thin layer of cement with a brush. Each tier is laid separately and a thin layer of cement poured over it to eliminate the need for separators. The Dur-X plasite material, manufactured in 2-, 3- and 4-in sizes, is impervious to water and therefore will not rust or rot, according to the manuturer.

NEW TIRES—B. F. Goodrich Tire Co., Div. of the B. F. Goodrich Co., Akron, Ohio, has started production of a steel-cable truck tire that gives up to 20% more mileage than conventional truck tires, according to the firm. The new tire, called the "Power Express Steel Cable," uses steel cords to reinforce the tires rubber carcass instead of textile cords. Thirty-nine high-tensile steel filaments, .0058 in in dia, are twisted to form each of the hundreds of cords in the tire, according to the company. "The 2-ply steel-cable tire will reduce flats from punctures by as much as 90%



A Screen for EVERY PURPOSE







Allis-Chalmers makes it easy for you to choose the most economical vibrating screen for any coal processing need. That's because A-C builds a screen for every coal application, and they're all systematically classified in our helpful screen selection guide, free on request.

For example, if you need a screen for sizing fine, moist coal, you'll find an Allis-

Chalmers screen specifically designed for the job. "Complete line" availability is one of the reasons more A-C screens are used in coal than any other make.

Ask your nearby A-C representative for your copy of Bulletin 25B6280, containing valuable screen selection guide. Or, write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS





DMS USERS WORKING 5 DAYS BY CUSTOMER DEMAND

You, too, can move into 5-day production because the DMS Unit Coal Washer will consistently produce the coal quality your customers want. Just one unit does it all and your preparation costs will drop 16¢ to 45¢ per ton. You can make money on the same seam

that's giving your neighbor trouble. Capacities as low as 20 TPH fit your need.

Better still! You can get delivery in 4 to 5 weeks. Join the prosperous coal men who produce *DMS-guaranteed* low ash coals. Ask us for full facts today!



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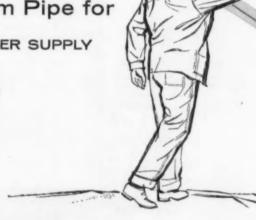
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COA



Alcoa Aluminum Pipe for

TEMPORARY WATER SUPPLY
OR DRAINAGE
COMPRESSED AIR
STEAM...FUEL



Portable piping plays a major role in keeping mining operations on the move. Here's why it will pay you to specify light, strong ALCOA® Aluminum pipe for your portable piping needs:

PORTABLE . . . One man can easily handle several standard lengths of ALCOA Aluminum pipe. Small crews can quickly and easily lay long lines of pipe. Pick-up and relaying is just as easily accomplished to keep pace with moving jobs.

ECONOMICAL . . . Quick, easy handling by small crews means low laying costs. And extra long service life adds extra savings.

DURABLE . . . Rugged Alcoa Aluminum pipe stands up under heavy abuse when laid or strung from supports over or under the roughest terrain. And aluminum is highly resistant to corrosion under the most severe conditions.

Operating efficiency of ALCOA Aluminum pipe is excellent. It has the same friction factor as smooth drawn tube of other metals, insures low loss of head.

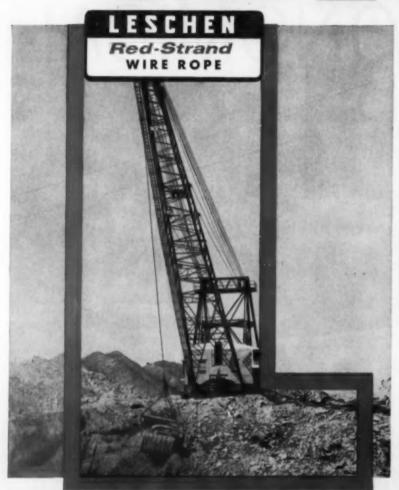
ALCOA Aluminum pipe and quick couplings of aluminum are immediately available—through a nationwide network of distributors. You'll find them listed under "Pipe" in the Yellow Pages of your telephone directory. Check your distributor for a complete list of sizes available . . . or use the handy coupon.

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when the going gets rough-Give *L"



When the bite is on the dragline, you'll be glad you rigged with Leschen—the wire rope that's the same top quality in every foot of every reel. The new Leschen wire mill is designed to deliver exactly that. New machines...new processes...exclusive new continuous-flow technique—all as modern as tomorrow. Try

Leschen Red-Strand Wire Rope now and see how its uniform quality makes your operation safer, your replacement time farther in the future. Make your next order Leschen! Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

LESCHEN WIRE



ROPE DIVISION

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DIVISIONS: Connors Steel, Delta-Star Electric, Disston, Forge & Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vuican-Kidd Steel, H. K. Porter Company (Canada) Ltd.

Equipment News (Continued)

and will practically eliminate bruise breaks in the tire carcass." Because the steel cords will not stretch the new tire eliminates flexing of the tread and hence gives added mileage, states a Goodrich spokesman. Having thinner sidewalls than tires built with textile cords, it runs cooler, has greater safety and longer life, the spokesman added. Sizes available: 9.00-20; 10.00-20; and 10.00-22. The tires can be used on both front and rear wheels but are recommended especially for front wheel applications on high-speed trucks.

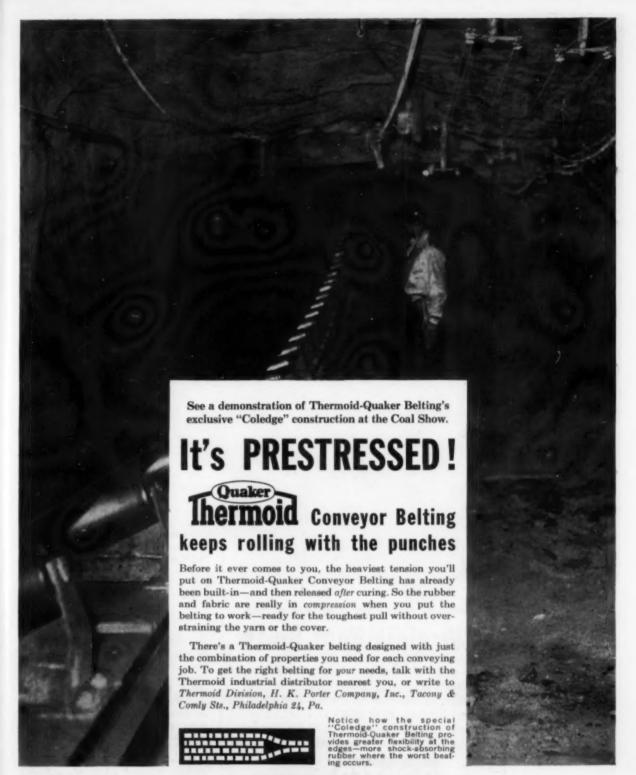
Equipment Shorts

Prevent Sticking—It is now possible to prevent injector sticking and filter plugging in diesel tractors by use of oil additives, reports E. I. Du Pont de Nemours & Co., Wilmington, Del. Field tests, reports the firm's Petroleum Chemicals Div., show that 1.5 lb of Du Pont fuel oil additive No. 2 and 0.05 lb of Du Pont metal deactivator per 1,000 gal of diesel fuel solved sticking problems plaguing several makes of tractors. One firm, reports Du Pont, increased service life of its diesel engines 2 or 3 times by using the additives.

Curved-Shank Tooth — Caterpillar Tractor Co., Peoria, Ill., is offering a new curved-shank ripper tooth designed to eliminate rock drag and slabbing. Because it can shed broken rock better, states the firm, the curved shank passes through tough, resistant material more easily, eliminating delays required to clear the tooth of bunched-up material. The new tooth is built of steel plate said to be more resilient and wear-resistant. Mounted in a new cast-steel clevis, it provides smaller ripping angles at shallower depths than previously possible, adds Caterpillar.

Power Units—Two four-cylinder power units, G-149 and G-226, were recently put on the market by Allis-Chalmers Mfg. Co., Milwaukee. The 149-cu in G-149 develops 45 bhp at 2,000 rpm and the 226 cu in G-226 develops 67 bhp at 1,800 rpm. Both are water-cooled, valve-in-head engines with replaceable wet-type cylinder sleeves. The units come for use with natural or LP gas, kerosene, No. 1 distillate or tractor fuel. The firm reports economical operation through use of maximum high-compression ratios.

Rerated Motors—Lima Electric Motor Co., Inc., subsidiary of Consolidated Diesel Electric Corp., Lima, Ohio, has out a line of new rerated NEMA Type E motors. They are totally enclosed, fancooled, and especially useful in non-

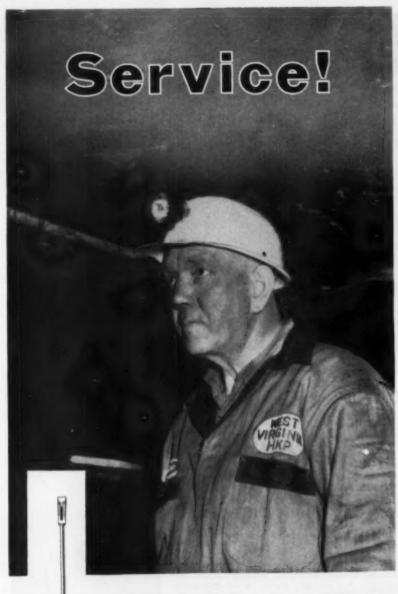


THERMOID DIVISION



H.K. PORTER COMPANY, INC.

Divisions: Connors Steel, Delta-Star Electric, Disston, Forge and Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.



The experience of specialists is at your service

West Virginia Roof Bolts

Need assistance in solving difficult roof-bolting problems? Want maximum safety, easier installation and prompt deliveries of roof bolts? Write Connors Steel Division, P. O. Box 158, Huntington, West Virginia or call JAckson 9-7174 for service you will like . . . quality you can trust.

CONNORS STEEL



DIVISIONS: Connors Steel . Delta-Star Electric . Dissten . Forge & Fittings . Leschen Wire Rope . Mouldings

Equipment News (Continued)

explosive atmospheres containing excessive moisture or dirt. All standard commercial frequencies and voltages below 600 V are available.

Multi-Section Edges—Bulldozer edges for D8 and D9 angling and straight dozers now are available from Caterpillar Tractor Co., Peoria, Ill., in one-or two-piece units of ¾ and 1 in thickness for most No. 8A and 8S blades. Standard 1½-in edges for all No. 9A and 9S blades may be purchased in either one-or three-piece design. Multi-section edges are lighter, can be transported more easily and quickly installed by two men without special hoist equipment, states the company.

Free Bulletins

Kennametal Guide—Complete listings and prices of mining tools can be found in a new catalog from Kennametal Inc., Latrobe, Pa. It includes extra-strong Type B cutter-bit shank, cutter-bit style U3RA for severe cutting conditions, and other new or modified bits.

Short Circuit—A new bulletin from Ohio Brass Co., Mansfield, Ohio, tells all about short-circuit protection. It covers application, operation and all other data for Type-A Magna-Trip interrupters, designed to prevent extensive cable damage often caused by short circuits.

On Engines—General Motor's Detroit Diesel Engine Div., Detroit 28, offers a brochure describing industrial and automotive engines available in its new "All-Purpose Power Line." Ratings and dimensions on over 100 in-line, "V," and turbopower engine models are in-

Control Switches—Construction features of Type 210 instrument and control switches and their advantages are described in Bulletin 14B8112B, Allis-Chalmers Mfg. Co., Milwaukee 1. Rated for 20 amp continuous capacity with 600 V the switches are designed for panel-mounting, are used with circuit breakers, transformers, tap changers, motor-operated rheostats and other electrical control equipment.

Motor Guide—Century Electric Co., St. Louis 3, issued a 1959 Motor Application Guide (Form 270A), applicable to all industry. Its purpose is to make motor selection easy. Information about Century motors as well as nine major factors in motor selection are described in detail.

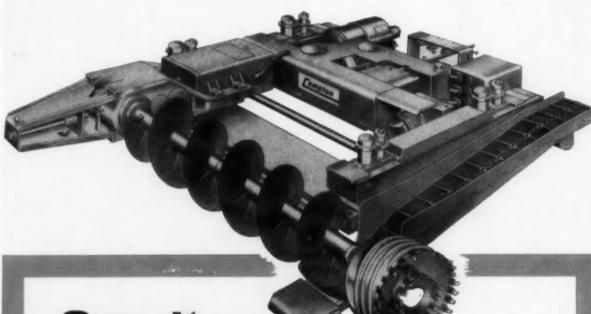
Gearmotors - Engineering data on



announcing ...

the New Compton

Low-Type Underground Auger



See It ...

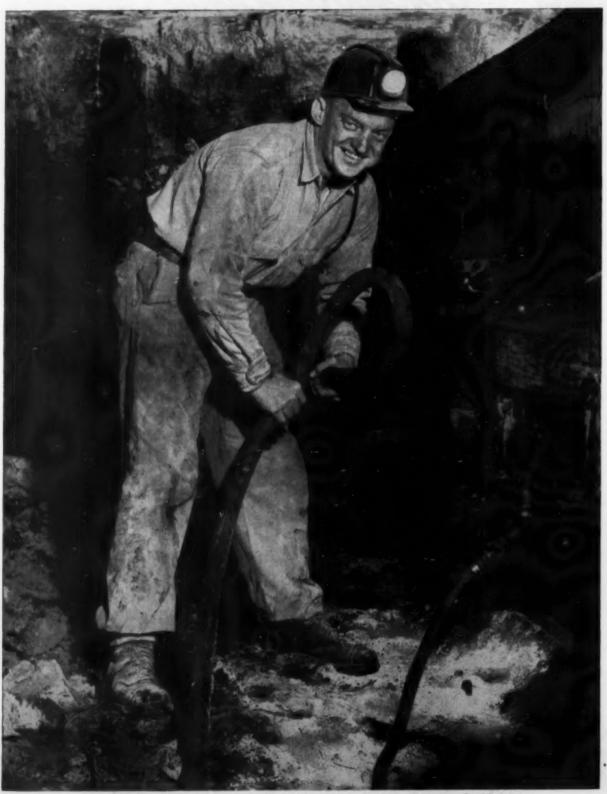
Booth 1756

Cleveland Coal Show

Compton, Inc.

CLARKSBURG, WEST VIRGINIA

If you watch cable costs



11 conductors in this continuous miner cable, yet see how flexible it is.

you'll like Tiger Brand

It's always a thrill to walk into a tough, cost-conscious mine and find that they are using huge quantities of Tiger Brand Amerclad mining cable. It vindicates our attitude that mining cable *must* be built to the very highest standards.

Our flat "Bridgewall" cable is an example. Tiger Brand flat twin mining cable in sizes #1 and smaller actually has a thick wall of neoprene between the insulated conductors. It locks the conductors and ground wire (if specified) in a tight embrace and holds them there—even when the cable is badly bent or twisted. No other type of construction is so durable.

Naturally, flame-resistant jackets are used throughout. And all of these very-heavy-duty cables are vulcanized in a lead mold under pressure, to insure a dense, tough jacket. *Money cannot buy a better cable!* American Steel & Wire, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS, Tiger Brand and Amerclad are registered trademarks



American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Bivision, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad





This special cable was made for continuous miner. It contains power, grounding, lighting and communication conductors.

Rubber-tired buggy fed with "Bridgewall" Tiger Brand. Cable is under continuous strain.



Tiger Brand Electrical Wire & Cable

A standard cable for every special job

- Asbestos Wire and Cable
- Mold Cured Portable Cord
- Shovel & Dredge Cable
- · Paper & Lead Cable
- Varnished Cambric Cable
- Interlocked Armor Cable
- Special Purpose Wire & Cable
- Aerial, Underground and Submarine Cable



Equipment News (Continued)

right-angle gearmotors are available from The Louis Allis Co., Milwaukee 1. single reduction, with output speeds of 23 to 280 rpm, are discussed. Also provided are pictures to illustrate mounting and cutaway views with engineering specifications.

V-Belt Drives—A new easy-to-use manual for plant engineers, design engineers and V-belt users describes a new line of smaller, less costly V-belt drives. Photographs, drawings and explanations of new Dyna-V sheaves and V-belts are included. Dodge Mfg. Co., Mishawaka, Ind.

Motor Selection—You can get a motorselector booklet with data for AC-motor users from Reliance Electric & Engineering Co., Cleveland 17. Selection data on motors from 1 to 200 hp as well as explanations of NEMA design classes and related facts are supplemented by photos.

Spray Nozzles—The Industrial Nozzle Div. of Wm. Steinen Mfg. Co., Newark, N.J., announces a catalog covering their complete line of industrial spray nozzles. Listings and data on all nozzle types, along with spray angles, dimensions, types of connections and capacities are listed in easy to follow tables.

Solids Pump—Bulletin P10-B41, containing engineering data for all models of the Wemco Torque-Flow pumps, is now available. It gives complete operating data in graph and tabular form for this non-clog solids pump. Suggested arrangements and dimensioned drawings are all included. Wemco, 650 5th Ave., San Francisco 7.

Car Shaker—New data sheet with latest revisions on Syntron's recently introduced unbalanced-motor vibrating car shaker is available. The car shaker is designed to quickly empty railroad hopper cars without damaging them. Illustrated data sheet gives complete description, electrical and mechanical facts. Syntron Co., Homer City, Pa.

Rear-Dump Hauler—Euclid Div. of General Motors Corp., Cleveland, 17, has issued a catalog on Model R-27 rear-dump hauler for heavy construction, mines and other industrial operation. Specifications, operating data and on-the-job pictures fill out this brochure.

Single-Phase Motors—A bulletin published by Robbins & Myers, Inc., Motor Div., Springfield, Ohio, describes its expanded line of integral-horsepower single-phase motors. Available in ratings from % to 20 hp, the line includes

COAL



LONG HAUL—Even the longest Barber-Greene Conveyors are built of standardized components . . . produced on a precision, quantity production basis. They can be assembled in almost limitless combinations to cut the time and cost of any material handling job.

Long or short haul—it costs less to move materials with belt conveyors

Thousands of installations—ranging from a few feet to thousands of feet—prove that belt conveyors move bulk material at lowest cost.

No other machine is so simple in construction or requires so little maintenance. No other machine can deliver such high hourly capacities with so little power or attention.

Barber-Greene has given a new meaning to belt conveyor economy. Built of standardized components, Barber-Greene Conveyors are delivered sooner . . . require less engineering . . . are erected faster . . . give top performance . . . and are more easily altered to meet changing or expanding requirements. Being standardized, repair parts are readily available—usually from the stock of your local distributor.



SHORT HAUL—Even the shortest Barber-Greene Conveyors are available in standardized components in the width and length to suit your needs. These small conveyors provide the economical way to handle the widest range of materials with greatest flexibility.

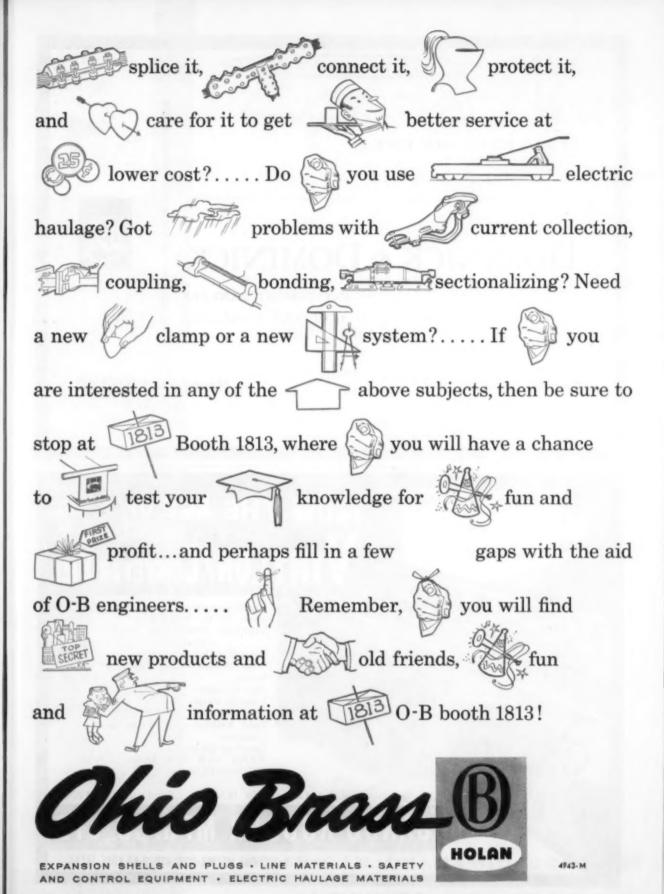
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notice to coal show visitors...

Are you interested in ___ ac power equipment? Do you know why? how? where? when? to use arresters, capacitors, and hardware to get safer, cheaper, more efficient electric power? Are you using trailing cables? Do you know when? where? why? how? to use circuit interrupters, fault locators, fused taps, ground clamps, supports to keep cables on the job longer with less downtime and lost production?.... Do you roof bolt? Are you looking for support, better installation, safer controls, helpful accessory equipment?.... Do you use aluminum or copper feeders? Do ways to support it, insulate it, section it,



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Explosives / lews

Four concentric layers of plastic insulate Cyanamid Blasting Cap Wires for maximum performance!

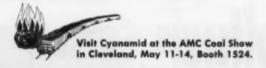
Vinyl plastic leg-wire insulation, applied by Cyanamid's unique continuous-bath method, offers superior uniformity . . . free of thin spots . . . and improved dimensional stability.

As a result, it combines these important advantages:

- Greater electrical insulation . . . with dielectric strength of 4,000-6,000 volts!
- · High abrasion resistance!
- · Improved flexibility . . . even at -40°F!
- Insulation values retained during prolonged high-temperature exposure!
- · Inert to materials used in dynamite formulations!
- · Non-porosity and greater moisture resistance!

Perfect concentricity is achieved by dipping the wire in four consecutive baths. Between baths, it passes through a series of dies which remove excess material and each coat is heat-cured. Imperfections which could occur in a single coating are eliminated in this multi-coat system.

For additional information about our complete line of electric blasting caps, write Cyanamid or consult our Field Engineer.



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AMERICAN CYANAMID COMPANY

EXPLOSIVES AND MINING CHEMICALS DEPARTMENT 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Collyer PORTABLE CORDS AND CABLES FOR MINES ...



Flat Twin Mining Machine Cable (Types W & G)



Lecomotive Gathering Cable

for use on:
Drills
Cutters
Loaders
Conveyors
Locomotives
Shuttle Cars

. . . and all types of continuous mining equipment above and below ground.



Portable Power Cable 2-4 Conductor Type G 2-6 Conductor Type W



Shovel Cables (Classes A, B, C and D)



Concentric Mining Machine Cable



Pertable Cords (Types S, SO, SJ, SJO)



Remote Control and Drill Cards

Equipment News (Continued)

open-protected, totally-enclosed fancooled and explosion proof frames. Book includes dimensions and ratings.

Parts Exchange—Caterpillar Tractor, Peoria, Ill., explains its parts exchange plan in a new booklet called "Exchange Down Time for Go Time." The booklet is full of cartoon-type illustrations, points out advantages of the program and how each component is inspected for possible re-use or replacement.

Leak-Proof Aprons — Bulletin No. 58100 from Chain Belt Co.'s Conveyor Div., Milwaukee 1, outlines availability of four Type "A" apron models, their specifications, dimensions and weights. These conveyor aprons handle large quantities of bulk materials under severe operating conditions where impact, size of lumps and types of material are governing factors.

Pumps—Five new bulletins bound in a single catalog entitled "Dorr-Oliver Pumps for Hot or Cold Corrosive and Slurry Service" are available. The book describes the complete D-O pump line for chemical process and allied industries. Line and wash drawings, photos, specifications and performance data fill out the pages. Dorr-Oliver, Inc., Stamford, Conn.

Valve Seating-What is the proper way of obtaining positive initial valve seating when reconditioning a diesel engine? What is the maximum diameter wear limit for a cylinder liner before replacement? New, 8-p bulletin from Caterpillar Tractor Co., Peoria, Ill., answers these and other questions on engine reconditioning.

Idlers—You may wish to send for "Belt Conveyor Idlers," Book 2716, from Link-Belt Co., Prudential Plaza, Chicago 1. The book lists the complete line of idlers made by the firm for belt widths of 14 up to 84 in. It was published to be a handy aid to you in selecting exact idlers for specific belt-conveying requirements.

Blasting Supplies—The 1959 edition of a booklet listing Hercules explosives, blasting agents and blasting supplies is available from Hercules Powder Co., Wilmington 99, Del. New blasting agents included are "Dynatex," a nitro-carbo nitrate for open-pit mining, "Kanite," nitro-carbo nitrate packed in cylindrical metal containers and others.

Smelting-Refining — You may wish to send for a colorful and highly illustrated booklet on Strategic-Udy smelting and refining. The booklet presents layouts, cost estimates and advantages of electric-

Collyer

INSULATED WIRE CO. 257 Pawtucket Ave., Pawtucket, R. I.

A completely NEW...vastly IMPROVED method of SHUTTLE CAR-TO-BELT FEEDING

THE RATIO-FEEDER



PAYS FOR ITSELF IN AS LITTLE AS SIX MONTHS IN DIRECT LABOR SAVINGS ALONE

ALREADY PROVED AND AT WORK IN MINES IN VIRGINIA, KENTUCKY, WEST VIRGINIA AND OHIO*

The Ratio-Feeder is an entirely new concept in shuttle car to belt feeding. It is the first feeder to incorporate ALL the characteristics necessary for true, all-around performance as a belt feeder. Overall savings are the result of one or a combination of the following features...apply them to your mine and see for yourself how much Ratio-Feeder can lower your cost per ton.

Cuts Shuttle Car Discharge Time increasing haulage capacity and sectional output or extending shuttle car haul distance, increasing room work and reducing move-ups and their costs.

Increases Belt Hauling Capacity. Continuous uniform loading permits more sections to feed a belt increasing mine productivity or it allows you to use smaller, less costly belts.

Eliminates Spillage and Belt Damage. Gentle, controlled loading reduces belt repair costs and increases their life. Even slate and rock can be loaded without damage. Clean-up costs for spillage are practically eliminated, too.



RATIO-FEEDER at work in Reppert Fairmont mine. Feeder provides elevation to belt eliminating shuttle car booms and their costs. It eliminates conveyor misalignments caused by shuttle cars bumping belt structures. Feeder can be moved by a shuttle car or loader. Large ramps are eliminated as is most roof taking.



CM Alloy Steel welded linktype chain, case hardened and with a material tensile strength of 150,000 p. s. i. drives the Ratio-Feeder

flights. This elementally simple, flexible, rugged type of chain has the superior wear, abrasion and break resistant properties required for severe mine service.

SEE THE RATIO-FEEDER

BOOTH 1210

Coal Show, Cleveland, May 11-14th

*Locations on request



COLUMBUS McKINNON CHAIN CORPORATION

Mining Equipment Division

TONAWANDA, NEW YORK

Manufacturers of CM HOISTS, CHAIN AND CONVEYORS

Ratio-Feeder-TM Pat. Pend.

MATERIALS HANDLING EQUIPMENT SPECIALISTS FOR 75 YEARS

SEE IT FOR THE FIRST TIME at the COAL SHOW

HOW the new AIRDOX Mobile Multiple Shooting System Operates

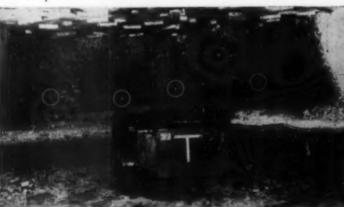
the NEW, HIGH PRODUCTION

AIRDOX

OBILE ULTIPLE HOOTING

NON-EXPLOSIVE MINING SYSTEM

Shooter drives the AIRDOX Shooting Car to the face. All AIRDOX Tubes, High Pressure Hose and Sequence Valve are carried on the car, which may be operated under roofs as low as 30".



AIRDOX Tubes are placed in holes. Note four tubes in lower row of holes in face, with other rows of holes above.



With AIRDOX Tubes in place and high pressure hose connected, shooter discharges first row in correct sequence, with single operation of AIRDOX Blow-Down Valve.

At the COAL SHOW
SEE THE NEWEST AND LATEST
AIRDOX CARDOX
PRODUCTION BOOSTERS

New AIRDOX Shooting Car Used in the new AIRDOX Mobile Multiple Shooting System. Self-propelled, especially designed for mine use. Transports AIRDOX Tubes, high pressure hose, Sequence Valve, etc.

New AIRDOX Lightweight Tubes Weigh only 27 pounds — easier and faster to handle.

New AIRDOX Automatic Discharge Heads Operate at predetermined pressure over and over, without replacing shear strips.

New AIRDOX Sequence Valves
Now permit multiple shooting, with
resulting savings in time and higher
tonnage.

Also a complete line of CARDOX heat treated alloy steel augers, carbide tipped bits, all designed to give you lower cost per foot cut or drilled . . . Plus many others.

For a Multi costs. one in gation and o protection volved

The apropel AIRD shoots operationards.

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You'll I

AIRI Keep al

B00.

For any mine now using AIRDOX, this new Mobile Multiple Shooting System will substantially cut costs. For mines not yet using AIRDOX, it offers one more compelling reason for immediate investigation of AIRDOX savings...in easier loading and cleaning, greater safety, better rib and roof protection. Relatively small expenditure is involved. See how it works.

The shooter drives to the face in the new selfpropelled AIRDOX Shooting Car. He places the AIRDOX Tubes in the lower row of holes and shoots them in proper sequence and in a single operation, in accordance with accepted safety standards. He moves the Tubes to the rows above and repeats until the entire face has been broken down.

Because the new lightweight AIRDOX Tubes also have automatic discharge heads, they can be used over and over again without the necessity of replacing disks, nails, shear strips, etc. Dead work is turned into productive time and higher tonnage.

Each tube discharges at a pre-determined pressure. Sequence and high-speed shooting is controlled by an automatic Sequence Valve on the AIRDOX Car, which also carries the Tubes and high pressure hose to the face.

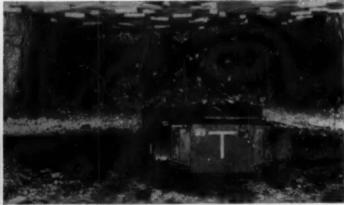
The AIRDOX Mobile Multiple Shooting System is a carefully researched and field-tested means to reduce face preparation time and costs. It retains all of the established AIRDOX advantages, may be used in seams of any thickness and offers particular advantages in thin seam operations.

Your AIRDOX Engineer has details and operating savings realized by the AIRDOX Mobile Multiple Shooting System. Ask him for a full scale demonstration in your mine. Let the facts speak for themselves.

See and discuss this revolutionary advance in coal mining at the Coal Show, Cleveland, Booths 2023 and 2122

Automatic, quick-sequence shooting of 4, 5 or more holes at a time reduces face preparation time and costs





Second row of holes is then shot. Note that Tubes are still in face. Automatic discharge heads in new AIRDOX Tubes enable Tubes to be reused without removing or replacing shear strips.

Here, the final row of holes has been shot. Note that coal rolls forward for easy loading. The shooter has made only one fourth as many trips to the face as formerly required.

You'll be seeing more and more new products and advances from

AIRDOX CARDOX

Keep abreast - start with a visit to

BOOTHS 2023 & 2122

AIRDOX CARDOX PRODUCTS COMPANY

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AIRDOX CARDOX PRODUCTS . . . Airdox and Cardox Non-Explosive Mining Methods . . . Complete Line of Carbide Tools . . . Augers, All Sizes . . . Auger Miners . . . Rotary Drills . . . Underground Mobile Equipment . . Roof Bolting Machinery . . . Hydraulic Drills . . . Cardox Cantral Compression Systems for Air, Helium and Other Gases.

THE NEW POWER CONCEPT IN THE



all purpose p

20 TO 1650 H.P. IN ONLY



THE GM DIESEL







"3.53" 38 to 97 H.P.



"3.71" 51 to 118 H.P.



"4-53" 51 to 130 H.P.







"6Y-53" 76 to 195 H.P.



"6-71" 112 to 252 H.P.



Now, <u>all</u> the benefits of engine standardization come to <u>every mine</u> with any type of equipment

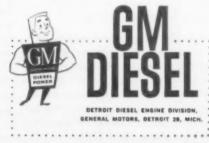
Whatever equipment a mine needs, there's a "Jimmy" Diesel tailored to it. So now you can standardize on GM Diesel power and buy the finest equipment available.

For example, you can power a 15-kw. generator, a 265-c.f.m. compressor, a 200-350 h.p. ore truck, and even a 1,000-h.p. dragline, all with "Jimmy" Diesels. And it's all top-quality equipment because it is powered by GM Diesels.

And there's good reason for standardizing on "Jimmy" Diesel power—new compactness, light weight, high efficiency, durability, inexpensive maintenance and lowest parts cost, plus one more reason—most important of all—the unmatched parts interchangeability of "Jimmy" Diesels.

GM Diesel covers the whole power spectrum with only 3 cylinder sizes—many parts that fit a 33-h.p. "Jimmy" also fit a 1650-h.p. GM Diesel. Thus, mining firms can keep a minimum stock of engine parts—far fewer than if they used a number of different Diesels or even standardized on any other make Diesel.

Want to know more? See your nearest GM Diesel distributor or write GM Diesel, Dept. M-4, Detroit 28, Michigan. Call or write today—there's money in it.



In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide



"6V-71"



'8V-71"



"6-110" 160 to 335 H.F



"13V-71" 224 to 504 H.P.



"16V-71"



NEW "24V-71" (Twin 12 448 to 1008 H.P.



"32V-71" (Twin 16)
600 to 1350 H.P.
(Turbacharged - 1650 H.P.



new, Safe, plug-in convenience for portable cable to 7500 volts

PLM Cable Couplers help put higher voltage a-c power to work easily, efficiently, safely. Designed especially for use in open-pit and deep-mining operations, they give plug-in convenience for connecting portable cable up to 7500 volts, to electric shovels, portable substations or other applications.

Coupler consists of plug and socket, with contacts mounted in single-piece, pressure-molded insulators and housed in heavy cast aluminum housings. Safety features protect personnel and equipment. Optional mechanical and electrical features meet complete range of requirements. Rating, 300 amperes, 7500 volts, grounded neutral. Write today for descriptive bulletin 375. PLM Products, Inc., 3881 West 150th St., Cleveland 11, Ohio.



3-WAY COUPLER ASSEMBLY Two, three or four-way assemblies of PLM Cable Coupler plugs or sockets give added plug-in convenience. SAFE

no exposed connections

CAPE

electrical and key-type interlocks guard circuit

SAFE

contacts always made or broken within housing

CABLE FITTINGS . TERMINATORS . SPLICING KITS

CABLE

Equipment News (Continued)

furnace smelting and subsequent refining of iron ore. Koppers Co., Inc., 1124 Koppers Bldg., Pittsburgh 19.

Portable Pump—A new bulletin from Stenberg Mfg. Corp., Hoosick Falls, N.Y., describes a submersible portable electric pump with maximum capacity of 3,000 gpm. It will pump to a maximum head of 220 ft, weighs 1,200 lb and requires no installation, suction hose or priming.

Pressure Regulators—Air Reduction Co., Inc., New York 17, covers its complete line of cylinder, manifold and station pressure regulators in a new 36-p catalog. The literature gives flow and pressure specifications as well as inlet and outlet dimensions for each regulator.

Continuous Borer—Catalog G-124, describing Type 300 variable-cutting-height continuous borer for lower measures of coal, may be obtained from Goodman Mfg. Co., Chicago 9. The 8-p illustrated brochure describes the borer for seams as low as 48 in or as high as 66in. Also available—Booklet G-141 on fixed-height borers.

High-Speed Gearmotors — General Electric's new 4-p manual, GEA-6815, points out design features, construction and application of high-speed synchronous generators. They are used wherever applications require a dependable, low-cost AC power source, notes the firm. General Electric Co., Schenectady 5.

Locomotives—A new locomotive brochure covers both gasoline and diesel-powered industrial and mining models of locomotives. Locomotives featured in the folder include the latest four- and six-wheel cab-in-front models, compact "Mine-o-motives" and heavy-duty tandems—built to be operated individually, or as single units, by a single operator in either cab. The Fate-Root-Heath Co., Plymouth, Ohio.

Flotators—An 8-p brochure describes Eimco-Process flotators and auxiliary equipment. Flowsheets, schematics and photos cover the basic circular-type mechanism and some design variations used to meet special requirements in oil and grease recovery. Process Engineers, Inc., 420 Peninsular Ave., San Mateo, Cal.

Caterpillar Products—A catalog just completed illustrates the complete line of tractors, diesel engines, motor graders and earthmoving equipment built by Caterpillar Tractor Co., Peoria, Ill. Nomenclature and specifications are included.

242

April, 1959 . COAL AGE

ALL-1

MOUNT/ Marga

COAL

Engineered for Performance in extremely

seams



TORKE TYPE 2



With overall body height of only 25½ inches, this latest model extends the range of TorKar performance to the thinnest commercially-workable seams . . . with every outstanding TorKar advantage retained.

Powered by a single AC or DC motor with efficient torque converter, the Type 26 TorKar has 3-speed forward and reverse transmission, 4-wheel drive, 4-wheel no fight steering, large 3½ ton capacity. For smooth operation, nimble thin-seam performance, rugged construction and long, low-maintenance life in service, choose TorKar Type 26. Write for specifications and prices, or call your National Mine man, today!

VISIT US AT THE COAL SHOW-BOOT HS 2605-2711 LOWER LAKESIDE HALL

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MOUNTAINEER DIVISION
Morgantown, W. Va.

WESTERN KY. DIVISION

WHITEMAN DIVISION Indiana, Pa. National Mine Service Company



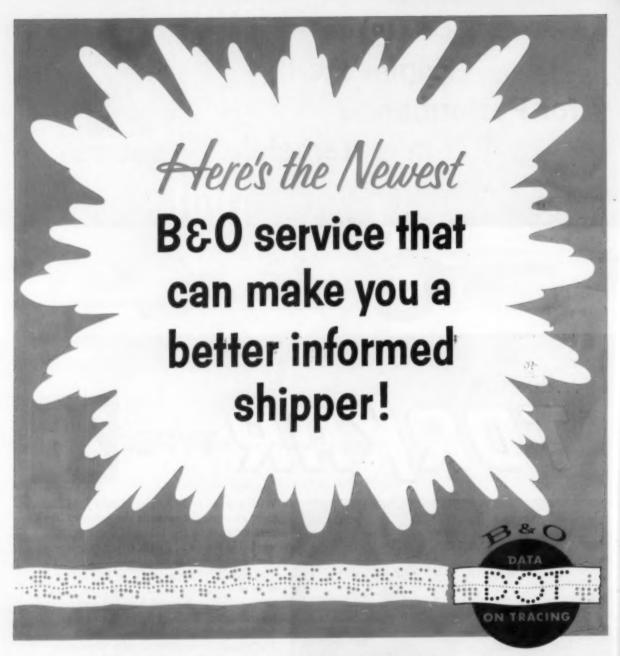
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IN CANADA

NATIONAL MINE SERVICE (CANADA) LIMITED Elliot Lake, Onterio



Fast...Fast...Fast tracing information is now available to shippers and receivers, thanks to B±O's new...DOT...(Data On Tracing). Through ultra modern methods, B±O sales and service offices across the Nation are kept informed of car movements 24 hours a day.

Ship via B&O and get the benefit of...DOT...

Ask our man!



April. 1959 · COAL AGE

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H. nour Iron mark burn Thions, ment devel

Day I with t ments.

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Among The Manufacturers

Clark Equipment Co. named several new distributors for its "Michigan" tractor shovels, dozers, scrapers and excavator-cranes.

Appointed were: Allied Equipment Corp., Carnegie, Pa., for parts of Pennsylvania, Maryland, Ohio and West Virginia; and Wright-Thomas Equipment Co., Inc., Charleston, W. Va., for West Virginia except Hancock, Brooke, Ohio and Marshal counties.

Detroit Diesel Engine Div., General Motors Corp., named Keystone Diesel Engine Co., Inc. Wexford, Pa., distributor of GM diesel engines in western Pennsylvania.

The diesel line will include automotive, industrial and marine models from 20 to 1,650 hp.

Koehring Co. purchased the Stardrill-Keystone Co., Beaver Falls, Pa.

Frice paid for Stardrill, manufacturer and assembler of water well, oil, gas, mineral, quarry and construction drills and rigs, was more than \$1 million.

Hauck Mfg. Co., Brooklyn, N.Y., announced association with the Van Dorn Iron Works, Cleveland, for exclusive marketing of Hauck-Van Dorn infra-red burner.

The burner, for car-thawing operations, is the product of a new department formed by the companies to develop that field.



C. H. Williams has been appointed application field engineer for Sanford-Day Iron Works, Inc., to work closely with the sales and engineering departments.

Mr. Williams, a mining engineer, has wide experience as a rodman, draftsman,

transitman, assistant chief engineer, and operational manager for West Virginia and Kentucky mining firms. Recently, he was assistant to the vice president for Simpson Coal & Chemicals Corp.

Austin Powder Co. has named two new coal-sales representatives in West Virginia.

Willis S. Smith will cover the Williamson area in West Virginia and eastern Kentucky. Charles J. Sorbello will service the Clarksburg, W. Va., section.

Joy Mfg. Co. has announced new appointments in its Coal Machinery Div.

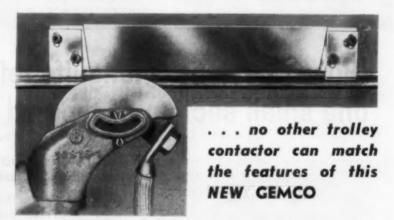
A. W. Calder, previously manager of the Continuous Miner and Loader Dept. is now director of engineering. John Merck is manager of engineering for loy's Franklin, Pa. plants.

William H. Stewart was chosen Pittsburgh district manager for the Electrical Wire Div. of John A. Roebling's Sons Corp., subsidiary of Colorado Fuel

GEMCO

MAGNETIC

TROLLEY CONTACTOR



CUTS 95% OF MAINTENANCE

NO FRICTION-The trolley shoe never touches the contactor

UNLIMITED LONG LIFE—Nothing to wear out because there is no physical contact between the contactor and trolley

NO REBOUND POSSIBLE—No false signals or switch operation from contactor rebound as is common with mechanical types.

OPERATES AT ANY SPEED—No train is too slow or too fast to allow posi-

POSITIVE DIRECTION SENSING—Directional control circuits are made in a quick, positive and dependable manner.

NO BURNED OUT COILS—Unique circuitry prevents the burning out of control relay coils often caused by the locomotive stopping on the contactor.

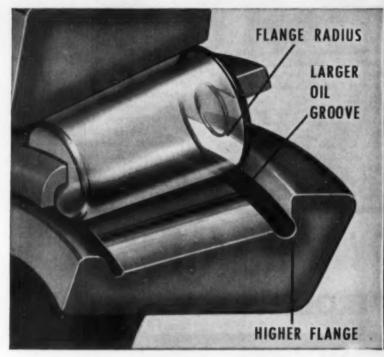
See Us In Cleveland At Booth 608.

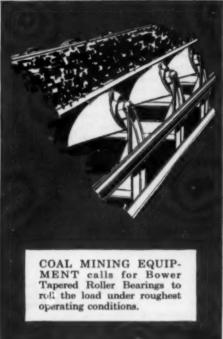
GENERAL EQUIPMENT AND MANUFACTURING CO.

116-120 SO. CAMPBELL ST. LOUISVILLE 6, KENTUCKY

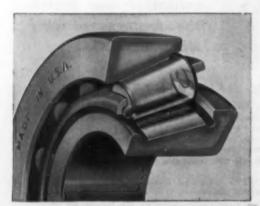
GENERAL EQUIPMENT AND MFG. CO.	LOUISVILLE 6, KY
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Address	
City	

Better products, faster, from your Bearing Specialist:





Bower designs 3"long-life" refinements into one small section of tapered roller bearings



Bower Tapered Roller Bearings are Spher-O-Honed: 1. Roller heads are spherically contour-ground, need no "run-in"; 2. Oil groove is bigger for positive roller-head lubrication; 3. Honing superfinishes inner and outer races for longer life.

Extra-high flange, larger oil groove and shoulder radius help reduce friction so bearings give high-tonnage service longer!

Bower's skill at the design board pays a bonus in service life when tapered roller bearings go to work in your machines. Take for example these three design refinements in one small area:

Higher flange gives rollers a large, "two-zone" contact area, cuts unit pressure on each roller; it also improves roller alignment, thereby reducing wear and resulting "end-play". Larger oil groove insures positive roller-head lubrication; increases efficiency and decreases wear. Shoulder radius helps the oil groove maintain an unbroken film of lubricant on the roller heads. All three add up to longer bearing life, lower cost to you.

Whether you need tapered or straight roller bearings, check first with the Bearing Specialist who handles the Bower line. He stocks both types; gives fast delivery on each. Call today!

BOWER ROLLER BEARINGS

FEDERAL-MOGUL SERVICE

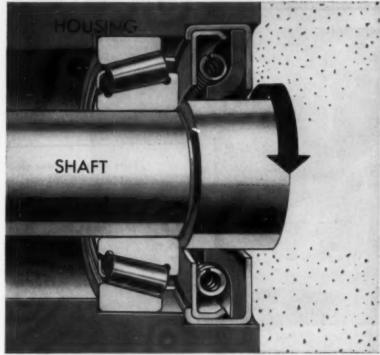
DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. - DETROIT 13, MICHIGAN



Nat

leat

Better products, faster, from your Bearing Specialist:





In leather or synthetic, National industrial oil seals keep lubricant in, dirt out of your valuable machines!



National Oil Seals feature: 1. Micro-Torc leather that seals in oil and grease, has untreated side to absorb lubricant; 2. Syntech synthetics "prescription-blended" to meet specific operating conditions.

Micro-Torc and Syntech oil seals come in standard sizes or made-to-orderformining and materials-handling equipment

Count on National Oil Seals to guard your costly machines! They seal in the lubricant so vital to precision bearings; seal out abrasive dirt and corrosive moisture so harmful to bearings and other machine components—and there's one for any job.

National Micro-Torc leather is impregnated only part-way through. The coated side seals perfectly; the untreated, porous side absorbs the lubricant leather needs to stay flexible, run cooler and longer. National Syntech synthetics are "prescription-blended" to meet the most exacting conditions of temperatures, shaft speeds and other critical factors. Both types come in all sizes.

In leather or synthetic, National industrial oil seals protect your capital investment at low cost. So why take a chance on a used seal? Call your National Seal specialist for replacements!

NATIONAL OIL SEALS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. . DETROIT 13, MICHIGAN



FLEXCO® FASTENERS!



(PHOTO TAKEN AT PEABODY COAL CO., MINE #10, PAWNEE, ILL.)

Tight production schedules require dependable belt fasteners!



Cutaway of a Flexco application showing the compression plates, teeth and precision-made bolts and nuts.

Daily, the thousands of "working" belt splices throughout the country are proving the superior holding power of FLEXCO joints (no other belt fastener is so widely used). Belt maintenance crews like to work with Flexco fasteners because they are easy to apply—joints last a long time — worn plates can be replaced quickly—ideal for repairing rips and tears.

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS

WITH FLEXCO . . . the quality fasener for all heavy-duty conveyor belt applications: COAL & METALS, SAND & GRAYEL, CRUSHED ROCK, CONSTRUC-TION EQUIPMENT, etc.

> Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

FLEXCO "25-PAK"



"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Hexible STEEL LACING COMPANY

4638 LEXINGTON STREET

CHICAGO 44, ILLINOIS

Manufacturers (Continued)

& Iron Corp. Thomas A. Martino was named Cleveland district sales manager for the firm.

Donald M. Mahady has been appointed midwest belting engineer by United States Rubber Co.

He will operate out of Chicago.

Briefs

John P. Millet is the new vice-president and general sales manager of Varel Mfg. Co., producer of rotary rock bits.

John R. Burkett takes over as general sales manager for American Cyanamid Co.'s Explosives and Mining Chemicals Dept.

Earl D. Pruess was named field engineer for the Construction Machinery Div. of Clark Equipment Co., and will work with the "Michigan" line of machinery.

Charles F. Skinner takes over as vice president and general manager of the Western-Knapp Engineering Co.

William Fornwald has been promoted from sales representative of Sprague & Henwood, Inc., to assistant sales manager, and will devote most of his time to drilling and sampling equipment.

John M. Perkins, formerly promotion manager of the American Car & Foundry Div. of ACF Industries, Inc., has been named director of industrial product sales.

John E. Joy has been assigned as a safety products sales engineer in Indianapolis, Ind., for Mines Safety Appliances Co.

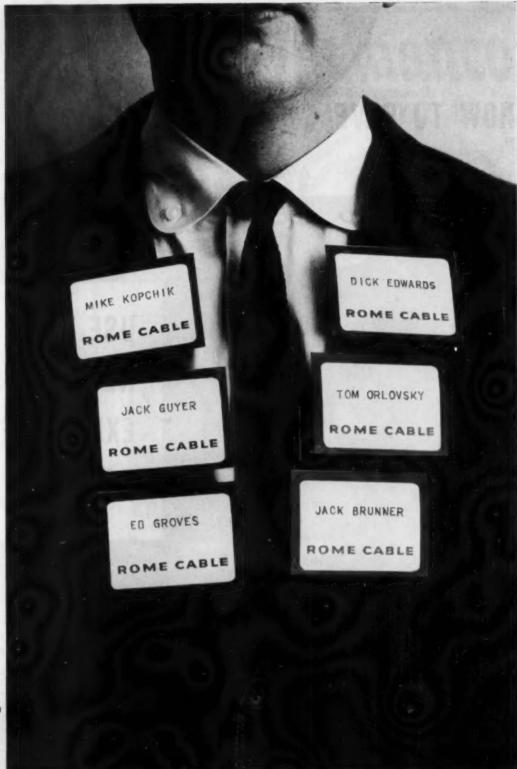
In a reorganization of company structure at Firth Sterling, Inc., Thomas G. Barnes, formerly vice president, sales, assumes the duties of vice president and general manager, carbide division.

Appointment of Jack Bradley as assistant sales manager of the Industrial Div., Lincoln Engineering Co., has been announced.

Paul J. Reeves assumed the duties of vice president in charge of sales for Timken Roller Bearing Co. on March 1.

Hugh I. Hunt is the new truck-tire sales manager for the General Tire & Rubber Co.'s Cincinnati Div.

COAL





MEET THE MEN

MEN FROM ROME CABLE...MAY 11, 12, 13, 14
'59 COAL SHOW—BOOTH 1504
CLEVELAND PUBLIC AUDITORIUM

1715? # 220? HOW TO SAVE # 270? #340? #340?



*For packing industrial explosives

One of these figures probably comes close to the potential savings in YOUR operation when you switch from your present method to the new and improved Bemis Explosives Bags. It depends, of course, on how many holes you shoot per day, and how heavily you load the holes.

Take, for example, the figure of \$270 per day savings. It works out this way: Cans cost approximately 70 cents each. Assuming you load 10 cans per hole and shoot 60 holes per day, your container cost is \$420 per day.

But Bemis Explosives Bags cost only 20 to 25 cents each. At 10 bags per hole and 60 holes per day, that is \$150—a saving of \$270 per day.

Furthermore, Bemis Explosives Bags are the toughest really waterproof explosives bags you can find. Leave them in wet holes three days or more... and they still shoot perfectly. The Bemis extruded seamless poly liner provides the waterproofness; the tough burlap or Bemis Flexiply® (multi-ply creped kraft) outer tube supplies the strength.

Look for the red stripe which identifies Bemis-extruded pinhole-free poly. Write or phone us . . . and a Bemis specialist will see you promptly.

YOU DON'T HAVE A BAG-PACKER?

There's a simple solution to that problem . . . a Bemis Packer-Ette. The capital investment is surprisingly small. It maintains a steady production of six bags per minute. Two-man operation . . . substantial labor saving. Accuracy to 3 ounces on a 33-lb. bag. Complete cleanliness,

Visit the Bernis Booth No. 2047 American Mining Congress 1959 COAL SHOW

Bemis



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poner 115-1 lamp

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ventic

COAL

General Offices — 408 Pine Street, St. Louis 2 · Sales Offices in Principal Cities



RADICALLY NEW Super Rough Service

with the

STURDILITE

FLOODLIGHT

- ★ Free-floating, Diaphraym-action Lamp Suspension
- * Multi-plane Resilient **Base Mount**







In repeated scientific tests, the combination of revolutionary new components and lamp in Model SRS 115-150 averaged 6000 times longer lamp life before burnout than former floodlights. From a few days to months in field tests - that's the amazing record of extended lamp life of this STURDILITE over conventional lights.

MERRITT-CHAPMAN & SCOTT BIGGET CONSTRUCTION JOBS IN AMERICA TODAY

High and low voltage models for all requirements in heavy construction, mining, quarrying, etc.

COMPLETELY REDESIGNED:

PHOENIX PRODUCTS COMPANY

HOW armanco HORIZONTAL DRILL

AT TRUAX-TRAER RED EMBER MINE

Example:

5 MINUTES SET UP TIME 15 MINUTES TO DRILL 60 FT. HORIZONTAL HOLE



T HIS new drill is equipped with selfstarter and generator, dual type front wheels, truck type rear axle with hy- All hydraulic feed. Powered by 106 H.P. draulic brakes, and traction drive with an invariant feed. Powered by 106 H.P. engine ● Four individually adjusted hydraulic jacks ● Drills 5" - 6" - 8" holes to 100 feet or more ● Greater drilling speed ● Faster auger retrieving ● Fast reverse for drilling and cleaning of hole ● Accuracy and mobility both forward and reverse. Here is the modern answer to faster, lower-cost drilling

> HEE COHDON . Send for complete details

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Company				
City				

NOW - Whitney Distributors can renew

AVAILABLE ONLY TO WHITNEY MINE CHAIN USERS...FOR EXTRA SERVICE LIFE, MORE TONNAGE PER CHAIN!

You get double-barreled savings when you purchase Whitney Flight Conveyor Chain. First — economical initial cost and unmatched quality. Second — a real cost-saving PLUS in the Renewal Program provided by your Whitney Chain Distributor.

HERE'S HOW IT WORKS:

Whitney's exclusive construction allows complete renewal of your Whitney Flight Conveyor Chain without the expense of replacing the long-wearing flights. Your chain is carefully assembled with brand new factory chain sections, new flight studs and nuts. Your present flights are thoroughly inspected and firmly secured to the new chain sections, using factory torque specifications. Flights are replaced only when actually required.

Here's a few specific examples of the real savings you get:

CHAIN APPLICATION	MACHINE MAKERS PART NO.	* TOTAL PRICE OF RENEWED CHAIN	ORIGINAL PRICE OF NEW CHAIN	% SAVINGS OVER NEW CHAIN PRICE	
1 CM Rear	X673-232	\$427.75	\$608.13	30%	
14 BU Loader	A18960A-111	609.02	959.78	37%	
11 BU Loader	11054A-254	872.77	1,260.61	31%	

^{*}THE ABOVE SCHEDULE DOES NOT INCLUDE A NOMINAL LABOR CHARGE

PICK-UP AND DELIVERY SERVICE

Pick-up and delivery service is free and speedy. A phone call to your Whitney Distributor will bring fast action. He'll pick up your worn chain, renew it and return it to you promptly, ready for installation.



START SAVING THE WHITNEY WAY

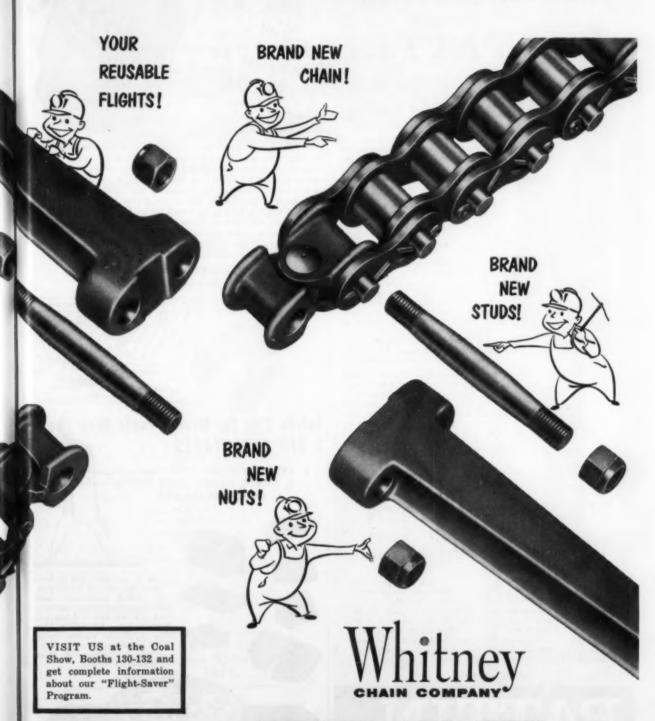


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your mine chain . . . save you 30%!



406H HAMILTON STREET . HARTFORD 2, CONNECTICUT

ROLLER CHAIN . CONVEYOR CHAIN . SPROCKETS . FLEXIBLE COUPLINGS . WHITNEY-TORMAG DRIVES

Get DOUBLE EXPANSION for DEPENDABLE roof support



PATTIN
roof bolts and
expansion shells

The unique double expansion feature of all Pattin expansion shells insures dependable roof support, in hard or soft roof conditions. Their double holding power guards against failure—even under a 20 ton pull!

Pattin features include a parallel contact with the hole, and no definite drilling depth is required, as the shell can be securely anchored at any place in the hole. They anchor solidly and will not turn while being tightened. Wedge and shell are assembled in a manner to prevent loss of parts in handling, and the bolt and shell assembly are furnished as a complete unit. Plates are bundled separately. No special nuts or ears are required on the bolts. These features make a safer roof — and a safer roof means fewer accidents, increased production, more clearance for equipment operation and better ventilation.

Pattin specializes in roof bolting—it's our business, not just a sideline! Your business is important to us, and our service engineers are always available for consultation on your roof problems—ready to give you service when you need it! WRITE OR PHONE US TODAY for complete details.



Pattin expension shells are available and sovieed exclusively by Calonde Fool and Iron Corporation, Benver, Colorado. Western mining companies should contact thom diract for information and consultation.

The PATTIN split-type BOLT

The split-type belt is one of the first stated belts, and continues to be a favorite wherever split-type belts are used. Many misses still prefer this type. The belt is a full 1-lack in diameter, with cyl threads and furnished with hex or square nuts and various size plates and wedges.

PATTIN MANUFACTURING COMPANY

The PIONEER of roof bolting . . . established 1888

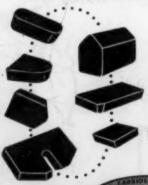


● Mining contractors, are prospectors, coal operators and construction firms are realizing tremendous savings by taking advantage of our exclusive fabrication service! Contractors send us the necessary diamond stones from their own stocks—we hand set them in a super-hard tungsten carbide crown and braze to the threaded steel blank. Hand-set bits assure the proper positioning of each diamond stone to achieve maximum cutting efficiency. The carbide matrix holds the diamond stones until entirely used up. These advantages mean lower drilling costs to you. We can also supply complete core bits or salvage the stones from used bits at nominal cost. Supplied in standard sizes EX. EXE. AX. BX. NX. etc.



Talide Tips for Mining Tools Give These
3 BIG ADVANTAGES . . .

I. EXTRA STRONG
2. SUPER HARD
3. SHOCK RESISTANT



● A complete line of lowcost, high-quality Talide Tips
is offered fabricators and
users for tipping machine bits,
rock bits, drill bits, roof bits and
open-pit bits. All Talide Tips
have a special surface finish
that facilitates brazing. Nonstandard shapes and sizes
quoted on request.

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254

Amherst



buys C-E Raymond Equipment again

FLOSSE Drying FINE COAL

Within a year, another C-E Raymond installation has been ordered for coal drying by the Amherst Fuel Company. This second unit will be located at the Lundale, West Virginia, preparation plant. It was specified on the basis of the efficient results obtained from the first job, installed at the Slagle plant in March, 1958.

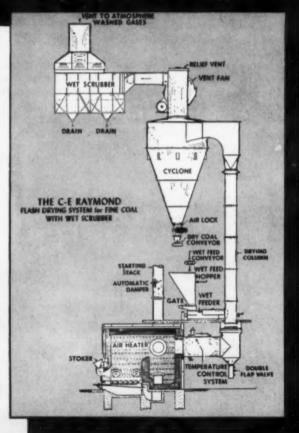
The new equipment is designed by C-E Raymond engineers to fit the plant layout, and it is scheduled for early operation. It consists of a single drying column with a furnace of extra capacity to provide for another drying column to be added later. The flash dryer, cyclone and other auxiliary units make up a complete integrated installation, equipped with a modern control system.

OPERATING DATA

Capacity—83 Tons of dried coal per hour—1/4" x o. Initial surface moisture—15% Final moisture content—4%

C-E Raymond Flash Drying Units provide a clean safe automatic system, without coal degradation, which are built to the requirements of large or small plants. High thermal efficiency and low operating and maintenance costs are characteristic features of this equipment.

> VISIT US IN BOOTH 112 Cleveland Coal Show May 11-14, 1959



Write for Goal Drying Bulletin

COMBUSTION ENGINEERING, INC.

1120 North Branch St. Kaymond Division

Sales Offices in Principal Cities

Combustion Engineering-Superheater Ltd., Montreal, Canada

JOY MINE FANS

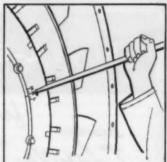
One fan for the life of the mine . . . adjustable blades

are turned to change volume and pressure

Adjustable blades, standard on all Joy Axivane® mine fans, make it possible to select one fan for the *life of the mine*. As system characteristics change with advance or retreat, the pressure range and the operating range may be varied by simply changing the pitch of the blades. The greater efficiency of this system greatly affects both power cost and total cost of mine ventilation.

You also save because: All Joy mine fans are shipped from the factory permanently mounted on their own steel sub-base. Installation is fast and easy because intricate concrete forms are not required. All bearings are mounted at the factory, and require no mounting or adjustment at the site.

If you are planning primary ventilation, make sure you talk to Joy . . . pioneer builders of vaneaxial mine fans.



To change blade pitch you loosen a few lock-nuts, insert an adjusting lever, and set blade pitch. Removing the lever and tightening the lock-nuts completes the job.

WRITE FOR BULLETIN 292-1













JOY

Joy Manufacturing Company Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

WSW | 7487-282



Okocord Red Saddle twin Type W cable in action on loader and shuttle car at Intermountain Chemical Company's trona mine. Secret of Red Saddle's added strength and security against short circuits is the pre-formed, red neoprene protective wall between the conductors, and the compact construction in which all components are locked together for maximum ruggedness.

They've cut mining costs with tougher cables

"We've found that the longer life of Okocord cables means lower operating costs for us," says Jack Wilson, Maintenance Supervisor for Intermountain Chemical Company of Westvaco, Wyoming. "Our mining operation is almost 100% electrified. We need cables that can stand up to extreme abuse. Okocord mining cables have everything it takes to prevent work stoppages that waste man hours or immobilize expensive equipment." They're tough, highly

flexible, and unaffected by oils, acids, alkalies or mine water.

On its shuttle cars—key to continuous, efficient operation—Intermountain finds that Okocord Red Saddle twin cable stands up best to high-speed reeling and unreeling... to being stretched tight against sharp tunnel wall corners... to frequent cable runovers... and to pulling and stretching. Says Mr. Wilson: "Okocord Red Saddle shuttle car cable minimizes internal shorts due

to cable abuse."

There are Okocord quality cables to keep your mining equipment operating efficiently: shovels, drills, cutting equipment and other machinery. There are Okonite specialists ready and willing to help you in planning new cable systems. And there is an illustrated, 76-page booklet on mining cables that's free when you write for Bulletin CA-450, The Okonite Company, Passaic, New Jersey.



where there's electrical power . . . there's OKONITE CABLE



A Subsidiary of Pacific Car and Foundry

See us at the Coal Show Booth 2151

"READY-TO-USE" DYNATEX" **COSTS LESS THAN PRILLS**

Extensive tests conducted in open-pit mines and quarries have shown that Dynatex produces rock or ore at a lower cost than prilled ammonium nitrate-fuel oil mixtures.

These tests, conducted under actual working conditions, proved that Dynatex permitted an increase in the distance between drill holes as well as an increased burden. Economies were effected all along the line. The explosives loading factor was reduced, as were loading time, labor, drilling, and blasting costs.

If you have, or are now using, a prilled ammonium nitrate-fuel oil mixture, be sure to test Dynatex on your next blast. Our technical representatives will be glad to show you how Dynatex blasting agent can cut your costs, too. Phone or write our nearest branch office for complete information.

NO FUSS-NO MUSS. No mixing on the job-Dynatex is delivered ready for use.

QUICK LOADING. In cartridges, Dynatex is quickly loaded into bore holes. Where conditions permit, Dynatex may be poured into bore holes.

UNIFORM STRENGTH AND QUALITY. Dynatex is a blasting agent of uniform known strength and dependability.

CHOICE OF PACKING. Dynatex is available in multiwall paper, special burlap or Flexo-Bag® containers, or in fiber drums of standard diameters.

"Hercules trademark



Explosives Department

HERCULES POWDER COMPANY

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

HERCULES 900 Market Street, Wilmington, Delaware



Typical Installation on Main Haulage

- e Rupped.
- e Lew in Cest.
- · Easy to Install
- · Increases Production.

"Cheatham Switch"

TRACK SWITCH THROWER FLECTRICALLY OPERATED

Over 50 years experience manufacturing

ELECTRIC TRACK SWITCHES and DERAILS

Write for Catalog

CHEATHAM ELECTRIC SWITCHING DEVICE CO. INCORPORATED

4780 Crittenden Drive, Louisville, Ky.

HACHOD & UNITED STATES SIGNAL CO. INCORPORATED

NUSSCO AUTOMATIC

BLOCK SIGNALS

FOR

MINES Save Trip Time on Main Haulage Prevent Collisions

4771 Louisville Ave., Louisville, Ky.

Timely — Proven — Tested Methods developed by Experienced Coal Mining Men to help Solve Your dayby-day Mining Problems.

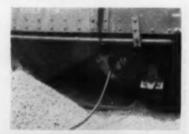
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Send me	COAL AGE for 1 y	ear at \$3 (U.S. and 6	Canada only).
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11 1 1 1 1 1 1			
City		Zone	. State
Mining	Company		
Hdqs. or	Mine Name		
	To Save Delay, P	lease Fill Out Comp	oletely CA459

COAL AGE, Fulfillment Manager, 330 West 42nd St., New York 36, N. Y.

Heavy duty vibration inducer moves sifts, compacts materials

High-amplitude vibrations . Portable . Shock and * Precise control through a range of a few cycles per second to over 60 cycles per second



Starts wet or dry materials moving—and keeps them flowing from railroad cars, massive hoppers, bins, chutes or conveyors. Pneumatically driven, the CCVP operates at low-noise level at all frequencies. It is portable with its own mounting clamps and can be mounted in any position or angle convenient to the job. Unconditionally guaranteed to give satisfaction

*Vibralator is a registered trademark

MARTIN ENGINEERING COMPANY

Neponset, Illinois

Vibrators available in 16 sizes, packet watch size to CCVP above. Prices begin at \$16.00. Write for free catalog.

Equipment on display AMC Coal Show—Booth #631



"ALL THIS FELLOW NEEDS IS A GOOD DOSE OF KELLY REPAIR PARTS"

KELLY MANUFACTURING CO.



MACHINE PARTS DIVISION STEEL FABRICATING DIVISION CHARLESTON 21, W. VA. MIDDLEPORT, OHIO

Move a MOUNTAIN Through a Pipeline

Pulp, coal, chemicals, sand and gravel, all are moved quickly, efficiently and economically with

MORRIS Type CK Pumps

Hydraulic movement of materials can be simple, if you think in terms of a Morris Type CK Pump. A heavy-duty pump, with extra-wide clearances to handle larger random sizes, the Type CK is available in 4", 6", 8", 10", and 12" sizes. Engineered and constructed for long wear and resistance to abrasion and corrosion the Morris CK is available in semi-steel, ni-hard, cast steel or stainless alloys.

With the CK Pumps' low internal velocity, you get less turbulence, less abrasion, less wear and lower power costs. The Type CK features ease of maintenance, with extra clearances provided for easy replacement of packing . . . impeller readily accessible for inspection.

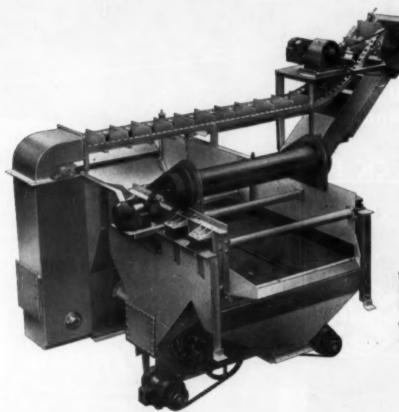
Morris maintains a nationwide network of centrifugal pump specialists, conveniently located to serve you. Their years of experience are invaluable when you plan a pump installation. For complete CK Specifications, and the name of your nearby Morris representative, write . . .

MORRIS MACHINE WORKS BALDWINSVILLE, N. Y.

MORRIS CENTRIFUGAL PUMPS

SALES OFFICES IN PRINCIPAL ...
CITIES - EXPORT OFFICE:
SO CHURCH ST., NEW YORK 7, N. Y.

PROVEN BY EXPERIENCE The Fuel Process M Type Coal Washer



 an efficient washer designed to lower costs and add to profits

This washer obtains grade products of highest excellence both in appearance and quality, improves your product and increases profits by eliminating loss in marketable material in refuse.

and IMPROVED FLOW SYSTEM provides

- 1. Lowest power in heavy media system.
- 2. Uniform volume and specific gravity of media.
- No blocking of refuse compartments by neargravity middlings.

GROSS GAIN OF \$500 PER DAY Says User

"The Fuel Process Washer was purchased for our plant for two main reasons. First, to improve the overall product and for quality control. Second, and most important, to recover marketable material which was occurring in the refuse as a result of inherent inefficiency. . . . The overall product has been greatly improved and we now have positive quality control. The refuse data leaves little doubt that there is virtually no marketable material being lost from the heavy media washer.

"The inescapable conclusion is that with the Fuel Process Coal Washer there has been a marked improvement in our product with a gross gain in realization in excess of \$500 per day." Write for complete details today. This fine product can earn money for your company, too.

FUEL PROCESS COMPANY

900 D STREET, P.O. BOX 8455, SOUTH CHARLESTON, W. VA.

NO MORE DOWNTIME DUE TO TIRE FAILURE!



New solid tires end downtime...ride softer ... outwear pneumatics as much as 3 to 1!

You should know that U.S. Royal Mine Cushions have moved millions of tons without causing one minute of downtime due to tire failure. These solid tires can't fail from ruptures, cuts, bruises, air loss. They ride softer, give up to triple the wear of pneumatics at no extra cost. Change over to these great U.S. Royals on present equipment... specify them on new equipment!

Wisit
BOOTH
801
at the
Coal Show

U.S. ROYAL TIPES CUSHION TIRES



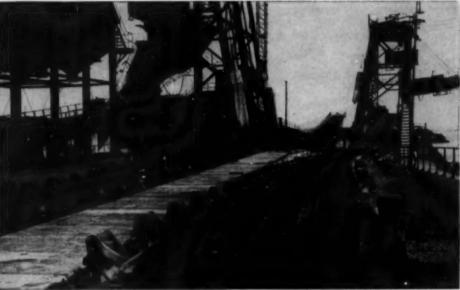
United States Rubber

Rockefeller Center, New York 20, N. Y. . In Canada: Dominion Rubber Company, Ltd.

Kickhacks OF Retarder No. 7 North Retarder No. 6 'Barney' Retarder * etarde No. 3 No. 5 Inert Retarder Retarde Control No. 4 Building Barney Retarde No 2 Retarder South

How the new UNION car-retarder system works - Pier 18 has two coal dumping systems and both use the same empty yard. Following through the operation of the North dumper, a loaded coal car leaves the North thawing house, rolls down an incline to retarder No. 1 where its exit speed is reduced, so that when the car rolls on to the "barney" pit, it is stopped by inert retarder No. 4. A "barney" then pushes the car up the slope to the dumper where it is stopped by retarder No. 5. Coal is then dumped into a barge.

The next full car pushes the empty car off the dumper. It goes by gravity through a kickback and spring-switch combination for return through retarder No. 2 to the empty yard. Controls for the power retarders and switches are incorporated in a control machine housed in a new tower building. One operator in this tower surveys the operation and operates the control machine. He has loudspeaker communication with the thawing sheds, the control cabins on the dumpers, and the yard office.



General view of North and South dumpers showing No. 2 and 3 retarders in foreground. Car entering retarder is going to the empty yard.

Fast, low-cost coal handling results from Automation at Pier 18

The Central Railroad of New Jersey recently modernized its coal dumping facilities at Pier 18, Jersey City, N. J. Now, one man sits in a tower, flicks a few levers, and controls loaded coal cars rolling by gravity to the dumpers and empty cars moving from the dumper to the empty yard. Formerly, this job required a crew of car riders and was a costly and hazardous operation.

Now, the job is handled quickly, safely and economically through a

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"Over a year ago we acquired 10 LRSW Mack trucks," says Red Parrot Coal Company. "This fleet has operated through two difficult winters, either of which would have closed down our operation with our former equipment. Many of our roads are of temporary construction on the coal benches. When they are subjected to the freezings and thawings and soaking rains of winter, this presents a real problem. These narrow benches demand a lot of mobility from our trucks to permit

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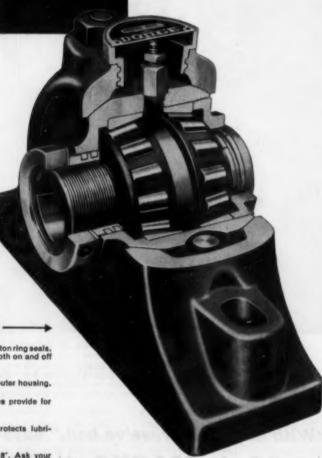
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FALK Shaff Mounted Drive
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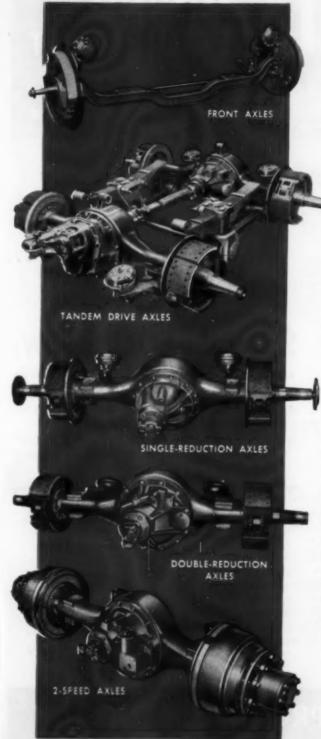
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COAL AGE · April, 1959

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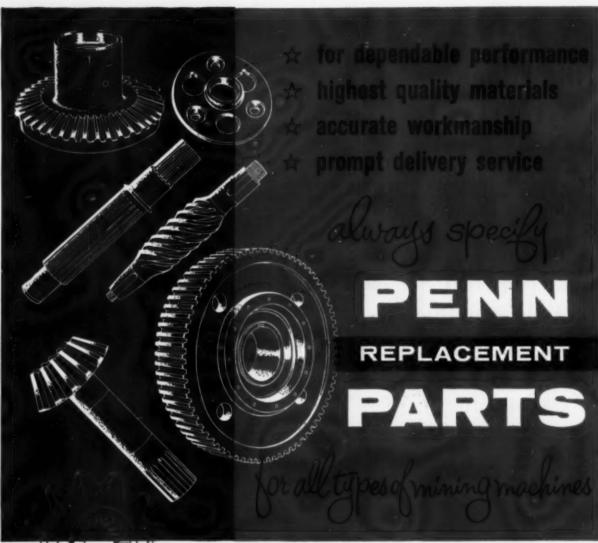
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3-7AU Sullivans

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15-12 Bullivans

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2-20 Ton MH77 Jeffreys, 42° 1.8.
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15-3 Ton Locometives, 250 Voft, any gauge
15-3 Ton Locometives, 250 Voft, any gauge
15-4 Ton Battery Locometives
15-4 Ton MH88 Jeffrey Locometives
16-5 Ton Locometives, 250 Voft, any gauge
16-4 Ton MH88 Jeffrey Locometives
16-4 Ton Locometives, 250 Voft
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81,400"—4.0 Stranded Highline Wire
1.00"—4.0 Stranded Highline Wire
1.00"—4.0 Stranded Highline Wire
1.00"—4.0 Stranded Sare Copper
1.100"—4.0 Stranded Highline Wire
1.00"—4.0 Stranded Copper Trans. Line
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1.8—Speeds New Tolephone Wire
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95-Heists from 5 h.p. to 800 h.p. of various
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2-Jeffrey 10 ton, type MH-110, 42" and 44" Gc
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12-Jeffrey, 6 ton, type MH-88, 42", 44" and 42" Gc.
4-Jeffrey, 8 ton, type MH-100, 2½" armor piete frames.
1-Jeffrey, 8 ton, type MH-96, 42", 44" and 48" Gc.
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10-G.E., 6 ton, type 825 Locometive, 22" high.
10-G.E., 8 ton, type 825 Locometive, 42", 44" and 48" Gc.
1-G.E., 8 ton, type 829 Locometive, 42", 44" and 48" Gc.
2-Goodman, 8 ton, type 32A, 26", 44" and 48" Gc.
3-Goodman, 8 ton, type 32A, 26", 44" and 48" Gc.
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1-7AU Sullivan on rubber. Universal Head.

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3-Goodman 312's, rebuilt er as removed from service.

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1-Joy 7-B Cutting Machines, 230/440 v. AC.

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2-Goodman 724 Slabbers.

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2-Jeffrey 331's, no low vein trucks.

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2-Jeffrey 296's track mounted. CUTTING MACHINES

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LOADING MACRINES
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1-Goodman 660 Leader, on cars.
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2-Jeffrey 61 CLR's, on rubber, 26".
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CONVEYORS

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2-150KW MG Set, G.E. and Westinghouse.

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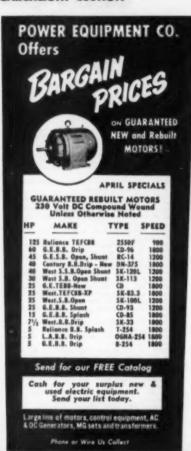
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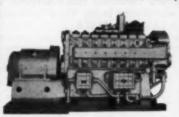
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 4-58C Jay Shuttle Cars, Mortched Pair, Elevating Discharge, Disc Brakes, 250 Velts D.C.—Modern.

 6-68C-58 Jay Shuttle Cars, Elevating Discharge, 4-Wheel Steering, 250 Velts D.C.

 2-65C-345 Jay Shuttle Cars, Nice elevated discharge, disc brakes, 34' high.

 3-42818 Jay Shuttle Cars, Disc Brakes, Elevating Discharge, Completely Modern, 250 Velts, D.C. 2-Standard, 1-Opposite Standard Drive.
- Valing Valts, D and Driv 1—Jeffrey Shuttle Car, 4-Wheel Drive and
- Steer.

 Steer.

- 1-11RU Joy Cutting Machine, 250 Volts D.C. with 9' Cincinnati Bar, Chain and bug-
- dwater.

 2-10RU Jay Cutting Machines, 250 Volt D.C. with bugdaster.

 2-29UC Jeffrey Universal Cutters, Permissible, 250 Volts D.C.

 1-512 CCH Goodman Cutting Machine, 250 Volts D.C.

 5-328 Jeffrey Cutting Machines, 250 Volts D.C.

 6-3388 Jeffrey Cutting Machines, 250 Volts D.C.

 5-350 Jeffrey Cutting Machines, 250 Volts D.C.

 5-350 A Goodman Cutting Machines, 250 Volts D.C.

- D.C.
 8-S12DA Goodman Cutting Muchines, 250
 Velts D.C.
 2-7AU Sullivan Cutting Machines, 250 Velts
- 1-124AA Goodman Slabber with One Let of New Parts.

3-212 AB Goodman Machines. 2-412 AA Goodman Machines. 2-351 Jeffrey Machines 35 & 30 H.P.

CONTINUOUS MINERS FOR SALE

3-4JCM Joy Continuous Miners, 440 Volts

RECTIFIERS FOR SALE

1-300 KW Westinghouse Sealed Ignitron Mer-cury Arc Rectifier, 7200/12470 Volts, 3 phose, 60 cycle primary end 275 Volts D.C. secondary. Complete with switching equipment and associated controls. Latest type, like new.

ROTARY CONVERTERS FOR SALE

1-150 KW Rotary Conveter, Serial No. 1054562, with 150 KVA transformer and panel boards.

COAL DRILLS FOR SALE

- 1-CD-26 Joy Twin Arm Rubber Tired, Self-Pro-pelled, 250 Volts D.C.
 1-CD-22 Joy Coal Drill, rubber tired mount-ed, self-propelled, 250 Volts D.C.
 25-CP-472 Electric Coal Drills, 250 Volts D.C.
 3-CP-572 Coal Drills.

CRUSHERS FOR SALE

2-Scottdale 18"x30" Double Roll Crushers. Like new.

ROOF BOLTING MACHINES FOR SALE

3-Fletcher Roof Bolting Machines, Rubber Tired, Self-propelled.

COMPRESSORS FOR SALE

3-Acmo Self-propelled Air Compressors, 83R, Model 168, Capacity 176CFM, with 40 H.P. Reliance Compound Motor. Excellent Condi-

LOCOMOTIVES FOR SALE

- 3-15 Ton Goodman Locomotives, Anti-Friction, Contractors. Modern. 1-10 Ton Goodman Locomotive, Serial No. 4371-Type 32A04-T, 250 Volt D.C., 42" track gauge. Height 34".

BOCK DUSTERS FOR SALE

- 1-MSA Track Mounted Rock Duster, 10 H.P., A.C. or D.C., high pressure, 30" high, any
- gauge. 2-MSA Bantam Rock Dusters, Rubber Tired,
- max bontom Rock Dusters, Rubber Tired, Partoble.
 2-MSA Bentom Rock Dusters, Skid Mounted.
 1-American Mine Door, Wheel mounted bantom type rock duster, 250 Volts D.C., 22" high.

HOISTS FOR SALE

- 10—#11½ Vulcan-Denver Moterial Heists, Complete with 3 H.P. D.C. Cempound Wound 1750 RPM General Electric Motor.
 2—Brewnie Hoists, Madel HKL-Good condition.
 1—Brewnie Hoist, Model HKM-Good condition.

ELEVATORS FOR SALE

- 2-Jay PL11-16 Elevating Conveyors, 2-Barber-Graene Self-Propelled Elevators, 30' long, gasoline or electric, 1-Barber-Greene Self-Propelled Cat Mounted, self-loading-gasoline driven.

CAT TRUCKS FOR SALE

- 4-T2-SAPE Joy Trucks, 250 Volts D.C. Per-
- missible.

 BELT CONVEYORS FOR SALE
 1-1200 ft. Goodman 97C Belt Conveyor.
 1-Goodman 99-5-GT-36 Tandem, 36" wide
 Belt, head and tail complete with 40 H.P.
 drive.
- drive.
 1-Jpy LaDel, 30" Tandem Belt Head complete with 25 H.P. drive.

CHAIN CONVEYORS FOR SALE

- 61AM Jeffrey Chain Conveyors, 10 H.P.
- 300' long. 3-61HG Jeffrey Chain Conveyors, 5 H.P. 40'

DIESEL PLANTS FOR SALE

- DIESEL PLANTS FOR SALE

 1-100 KW Diesel Generator Unit, with G.M.
 Diesel Engine and 100 KW Generator.

 1-D13000 Caterpillar Diesel Generator Unitwith Caterpillar engine and 75 KVA G.E.
 generator self-regulating, 220 Volt A.C.

 1-250 KW Diesel Generating Plant, consisting of Westinghouse 250 KW 275 Volt
 Compound Wound Generator driven by
 Twin 6110 General Motors Engines, Complete with switchgear and all appurtenances. New in 1956.

MOTOR GENERATORS FOR SALE

- MOTOR GENERATORS FOR SALE

 1-150 KW Westinghouse Motor Generator Set,
 1200 RPM, 250 Volhs D.C., 2300/4160 or
 440 Volts A.C., complete with switch gear.

 1-300KW Westinghouse Motor Generator Set,
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 Wound. Complete with D.C. panel and
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 2-300 KW Pertable Motor Generator Sets,
 2300 KW Pertable Motor Generator Sets,
 2300 KW O.C. and D.C. Automatic.
 3-50 KW G.E. and Westinghouse Motor Generator Set,
 2300 KW Ridgeway Motor Generator Set,
 Complete with switching gear.

 200 KW Ridgeway Motor Generator Set,
 Complete with switching set.

 2-200 KW Ridgeway Motor Generator Set,
 Complete with switching set.

 1-200 KW Ridgeway Motor Generator Set,
 Complete with switchgear and 1600 amp.

 1-T-E automatic circuit breaker, 2300 A.C.,
 275 Volts D.C.

MISCELLANEOUS FOR SALE

- MISCELLANEOUS FOR SALE

 240-AC&F 42" Gauge, 48" high Drop Bottom
 Mine Cars. Condition like new.

 3-24J Motors, 230 Volts D.C.

 1-24" Fem with drive.

 2-71/2 H.P. Tricycle Type Rubber Tired Mine
 Tractors, 7½ H.P. 200 Volt Single Phase
 Motors ar 230 Volt D.C. Motors.

 13-AC&F 3 ten Capacity 42" gauge, Drop
 Bottom Mine Cars, 26" high.

 150-Sanford-Day 5 ten Capacity Bottom Dump
 Mine Cars, 42" gauge, 40" high.

 1500' 36" Belt.

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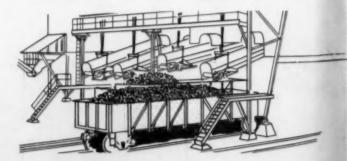


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